

UNIVERSITI KUALA LUMPUR MALAYSIAN INSTITUTE OF AVIATION TECHNOLOGY

EXAMINATION QUESTIONS BANK

TITLE: GAS TURBINE ENGINE II (ALD30203 TEST SET A / B / C / D (TIME ALLOCATIONS : 75 MINUTES @ 1 ¼ HOUR)

READ THE FOLLOWING INSTRUCTIONS CAREFULLY BEFORE ATTEMPTING TO ANSWER THE QUESTIONS:

- 1. Do not open this question booklet until you are told to do so.
- 2. Do not attempt to answer any question before you are allowed to do so by the invigilator/lecturer/instructor/technician.
- 3. You are required to attempt <u>ALL</u> questions in Multi-Choice Questions section.
- 4. Read the question and answer carefully before attempting to answer.
- 5. All answers multiple choice question should be marked with blue or black ink in capital letter (A, B or C) in appropriate box adjacent to the question number.
- 6. You may change the answer by placing a cross on the answer and choose another answer. If you wish to maintained the cross answer, rewrite the answer (A, B or C) next to the end of the row of boxes adjacent to the question number.
- You are allowed to make only <u>ONE</u> alteration on each objective answer. Erasing attempted answer by any means is not allowed.
- 8. After completed the examination, please insert the answer sheet into the question booklet before leaving exam hall.
- 9. Failing to comply with the above instructions will result in deduction on the total grades.

LUBRICATION AND COOLING SYSTEMS

| 1 A 4 | and 2 Gult - Lubrication system |
|-------------------------|--|
| | one major advantage of mineral base lubricants have |
| | 1 a friction resistance. We over vegetable |
| | b chemical stability. |
| | becauty of the oil used in turbine engine to |
| | 2. medium. |
| | low low |
| | C High |
| | Characteristic of oil molecules that causes them to stick the |
| | termed as: |
| Contraction of the | a. cohesion. |
| | e diversion. |
| | a name the amount of oil that flows into a |
| All and a second second | 4. What immus the amount of our date hows into the oil cooler of the turk |
| | a. An adjustable relief valve between the inlet and out |
| | b. An adjustable relief valve between in the inlet connection |
| | A thermostatic by-pass valve between the inlet and outlet experimental and |
| | The chin detectors in the lubrication system is used to a |
| 5 | a. any metal particles in the oil. |
| | ferrous metal particles in the oil. |
| | c. any metal particles and carbon in the oil. |
| 6. | The type of oil pump most commonly used on turbine engines is at |
| | a. constant speed pump |
| | b. variable displacement pump |
| | Constant displacement pump |
| | |
| 7. | The output from the scavenge pump in a lubrication system will be |
| | a. less than the pressure pump output |
| | b. greater than the pressure pump output |
| | c. same as the pressure pump output |
| 8. | If the oil filter becomes completely blocked |
| | a unfiltered oil will be delivered to the bearings |
| | B. flow of the oil to the bearings will be storged |
| | engine blood air will be abarred a day will be abarred a day |
| | engine bleed all will be channeled to cool the bearings. |
| 9. | Why is a centrifugal breather fitted in the oil system? |
| | a. prevents formation of sludge |
| | b. Assists in procesuring the all and |
| | ossists in pressurizing the oil seals |
| | prevents oil mist passing to atmosphere |
| | |
| | |
| | |
| | |

| | 0. Engine bearing seal failure would probably cause: |
|-----|--|
| | a. low oil pressure |
| | b, high oil temperature |
| | high oil consumption |
| | the sensine compartment is cooled airflow provided by: |
| 11 | During engine ground run, engine |
| | a. ram air angine fan |
| | reduction of pressure at the rear of the nacene |
| | the sead practice to drain the oil: |
| 12. | During oil change it is good protected but down |
| | immediately after constant had settled down |
| | b. when the contemperature is approximately 15 degree celcius when the oil temperature is approximately 15 degree celcius |
| | c. which the start of a start of the start o |
| 4.2 | What would be the effect if the oil system pressure relier tare stock in an open position |
| 13. | a. increased oil pressure |
| | insufficient lubricant |
| | c. decreased oil temperatures |
| | to further of the engine lubrication system is usually adjusted while the |
| 14. | The pressure relief valve of the orb |
| | engine is: |
| | iding |
| | b. running at 25 percent of rated thrust |
| | c. running at 100 percent of the |
| | use a determines the size of the oil pump in a full flow lubrication system? |
| 15. | What determines the size of hearing system |
| | a. size and type of bearing system if the servicement at maximum engine rated speed |
| | 6. Oil flow requirement at maximum engine rated speed |
| | c. types of lubrication oil and now requirement at engine idle speed |
| | and the state lubrication system is located in the service system is |
| 15. | When the oil cooler of the lubrication system is located in the scavenge subsystem, the |
| | ubrication system is referred to as: |
| à | hot tank system |
| h | full flow system |
| Ċ | cold tank system |
| C | cold turn system |
| | |
| | |



1. Which this characteristic is desirable in turbine engine oil

a. low flash point

b. high flash point

c. high volatility

2. What type of oil system is usually found on the turbine engine

a. dry sump, pressure and spray

- b. dry sump, dip and splash
- c. wet sump, spray and splash
- 3. The type of oil pump most commonly used on turbine engine are classified as:

a. positive displacement pump

- b. variable displacement pump
- c. constant speed pump
- 4. If all other requirement can be met, what type of oil should be used to achieve theoretically perfect engine lubrication

a. the thinnest oil that will stay in place and maintain reasonable film strength

- b. an oil that combines high viscosity and low demulsibility
- c. an oil that combines a low viscosity index and a high neutralization number
- 5. (1) Gas turbine and reciprocating engine oil can mixed or used interchangeably(2) Most gas turbine engine oil are synthetics
 - a. both No 1 and No 2 are true
 - b. neither No 1 nor No 2 is true

c. <u>only No 2 is true</u>

6. Manufacturer normally require turbine engine oil servicing within a short time after engine shutdown primarily to

a. prevent over servicing

- b. help dilute and neutralize any contaminants that may already be present in the engine oil system
- c. provide a better indication of any oil leaks in the system
- 7. What is the purpose of the last chance oil filter
 - a. to prevent damage of the oil spray nozzles
 - b. to filter the oil immediately before its enter the main bearing
 - c. to ensure a clean supply of oil to the lubrication system
- 8. In the jet engine which uses fuel-oil heat exchanger, the oil temperature is controlled by a thermostatic valve that regulates the flow of
 - a. fuel through the heat exchanger
 - b. both fuel and oil through the heat exchanger

c. oil through the heat exchanger

- 9. In the axial-flow turbine engine, compressor bleed air is sometime used to aids in cooling the
 - a. fuel
 - b. inlet guide vane

c. turbine vanes, turbine blades and bearing

- 10. Which of the following is the function of the fuel-oil heat exchanger on the turbo-jet engine a. aerates the fuel
 - b. emulsifies the fuel
 - c. increases the fuel temperature
- 11. After making welding repair to the pressurized type turbine engine oil tank, the tank should be pressure tested checked to

a. not less than 5 psi plus the maximum operating pressure of the tank

- b. not less than 5 psi plus the average operating pressure of the tank
- c. 4 psi-5 psi
- 12. The oil dampened main bearing utilized in some turbine engines is used to
 - a. provide lubrication of bearings from the beginning of starting rotation until oil pressure is established

b. provide an oil film between the outer race and the bearing housing in order to reduce vibration tendencies and to allow for slight misalignment

- c. dampen surges in oil pressure to the bearing
- 13. What unit in the aircraft lubrication system is adjusted to maintain the desire system pressure

a. oil pressure relief valve

- b. oil viscosity valve
- c. oil pump
- 14. What is the primary purpose of the oil-to-fuel exchanger

a. cool the fuel

- b. cool the oil
- c. de-aerate the oil
- 15. What would be the probable result if the oil system pressure relief valve should stick in open position
 - a. increase oil pressure
 - b. decrease oil temperature
 - c. insufficient lubrication
- 16. Why are fixed orifice nozzles used in the lubrication system of the gas turbine engine?

a. to provide relatively constant oil flow to the main bearing at all engine speeds

- b. to keep back pressure on the oil pump. Thus preventing an oil lock
- c. to protect the oil seals by preventing excessive pressure from entering the bearing cavities

17. Possible failure related ferrous-metal particles in turbine engine oil cause an electrical indicating type magnetic chip detector to indicate their presence by

a. disturbing the magnetic line of flux around the chip detector tip

b. bridging the gap between detector center(positive) electrode and the ground electrode

- c. generating a small electric current that is caused by particles being in contact with the dissimilar metal of the chip detector
- 18. What is the primary purpose of the oil breather pressurization system that is used on turbine engine

a. prevent foaming of the oil

- b. allow aeration of the oil for better lubrication because of the oil/air mist
- c. provides a proper oil spray pattern from the main bearing oil jets
- 19. Where is the oil pump pressure tapped from

a. upper stream of the pressure pump

- b. oil return line
- c. downstream of the main oil filter
- 20. What is the purpose of fume proof seal
 - a. prevent combustible fumes from front section entering rear section that can ignite
 - b. locating the engine components for easy maintenance
 - c. prevent the flame from spreading in event of fire occur
- 21. Turbine disk cooling air is tapped from
 - a. ram air flow from the atmosphere
 - b. exhaust gases
 - c. compressor bleed air
- 22. What is the purpose of insulation blanket
 - a. provide the cooling of the turbine area

b. shield portion of an aircraft structure from intense heat radiated by the exhaust duct

c. allow cooling air to flow through it

23. In dwell chamber entrapped air is separated by

- a. forcing the oil upward and spread it into a thin film
- b. return oil splash on to it
- c. action of the centrifugal force
- 24. Turbine engine utilized oil dampened bearing required

a. solid oil spray from an oil jet

- b. air-oil mist spray from an oil jet
- c. splash oil spray from an oil jet

- 25. Generally what types of heat exchanger used in turbine engine to cool the engine oil
 - a. fluid heat-oil cooler

b. fuel heat-oil cooler and air heat-oil cooler

c. water heat – oil cooler and fuel heat-oil cooler

- 26. Which type of the filter is disposable after serving an oil system
 - a. wire-mesh screen

b.

pleated fiber filter

- c. screen disk filter
- 27. A turbine engine dry sump lubrication of the self contained, high pressure design a. has no heat exchanger

b. consist of pressure, breather and scavenge sub system

- c. store oil in the engine crankcase
- 28. The purpose of relief valve installed in the tank venting system of turbine engine oil tank is to
 - a. prevent oil pump cavitations by maintaining a constant pressure on the oil pump inlet
 - b. maintain internal tank air pressure at the ambient atmospheric level regardless of altitude or rate of change in altitude

<u>c.</u> maintain a positive internal pressure in the oil tank after shutdown to prevent oil pump cavitations on engine start

29. (1) Wet sump oil system are most commonly used in gas turbine engines

(2) In most turbine engine oil tank, a slight pressurization of the tank is desired to ensure a positive flow of oil

Regarding the above statements

a. both are true

b. <u>only no2 is true</u>

- c. none of the above
- 30. (1) oil accumulation in the accessory gear box
 - (2) flooding of oil at the compressor rear housing
 - (3) oil in the combustion chamber

The above statements are refer to the oil system does not fitted with

- a. by-pass valve
- b. <u>check valve</u>
- c. relief valve
- 31. Turbine engine oil pressure gauges are normally calibrated in
 - a. pounds per square foot

b. pounds per square inch

c. pounds per inch

32. The recommended aircraft engine lubrications are

a. mineral or synthetic based

- b. vegetable, mineral or synthetic based
- c. animal, mineral or synthetic based
- 33. The purpose of directing bleed air to the outer casing case on some engine is to
 - a. provide optimum turbine blade tip clearance by controlling the thermal expansion
 - b. provide up to 100 % kinetic extraction from the flowing gases

c. allow operation in a thermal environment 600 to 800 ° F above the temperature limits of the turbine blades and vanes alloys

- 34. (1) fuel may to used to cool oil in the gas turbine engine(2) ram air may be used to cool oil in gas turbine engineRegarding the above statement
 - a. only No 1 is true
 - b. only No 2 is true
 - c. <u>both are true</u>
- 35. Scavenge pump is
 - a. same capacity than the pressure pump
 - b. smaller capacity than the pressure pump
 - c. twice capacity than the pressure pump
- 36. Which type of pump is commonly used in the gas turbine engine

a. gear-type pump

- b. gerotor pump
- c. vane type pump
- 37. Which of the following statement for the viscosity Index (VI)
 - a. A measure of oil's resistance to flow

b. Standard use to identify an oil rate of change in viscosity for given change in temperature

c. Comparison of weight of oil an oil weight of an equal volume of water

38. After repair is made on the reservoir, it must be pressure tested to

a. maximum operating pressure plus five psi

- b. 3 to 6 psi
- c. double than normal operating pressure
- 39. Primary purpose of a vent system
 - a. to vent excessive pressure in the bearing chamber and maintain the proper spray pattern
 - b. maintain differential pressure between the bearing chamber and lubrication system

c. all the above

40. By turning oil pressure adjusting screw on oil pressure regulator to clockwise direction

a. <u>increase oil pressure</u>

- b. decrease oil pressure
- c. remain normal operation
- 41. What is the purpose of scupper drain
 - a. drain out oil in the tank during an oil change
 - b. catch any oil spillage during oil tank servicing and drain overboard
 - c. none of the above

42. What is the purpose of Dwell Chamber

- a. provide an oil storage in the tank
- b. for oil dilution

c. entrapped air separator from oil

- 43. Synthetic oil rating in
 - a. second saybolt unit
 - b. saybolt universal viscosimeter

c. centistokes (cSt)

- 44. Why an oil tank is pressurized
 - a. to ensure oil flow to the pressure pump inlet
 - b. to suppress oil foaming, to prevent pump cavitations

c. all the above

45. Why it is necessary to drain the oil during oil change within short time after shutdown a. to prepare for next flight

b. to ensure all the contaminants drained out because they are still on suspension

- c. because oil is still hot
- 46. If incompatible lubricants are accidentally mixed when filling an engine, many manufacturer require
 - a. drained only

b. drained and flushed

- c. wait for next oil change
- 47. Of the pumps used in an oil system, which pump is considered to be tolerant of debris and ideal for use in a scavenge system
 - a. gear pump
 - b. gerotor pump
 - c. vane pump

- 48. All reservoirs should have 10 % expansion space for
 - a. allows for air expansion
 - b. allows room for oil to expand as it heats and allows for the collection of foam
 - c. allowing the formation of foam and heated gas
- 49. One of the most notable differences between reciprocating and turbine engine lubrication system
 - a. turbine engine oil has low flash point
 - b. oil in turbine engine is completely sealed from combustion gases
 - c. have different types of additive
- 50. What are the function of lubricating oil
 - a. reduce friction only
 - b. reduce friction, absorb heat, seals, cushions, cleans and protects corrosion
 - c. sealing and anti friction properties

FUEL METERING SYSTEMS

| | TURBINE ENGINE II FUEL METERING TEST |
|----|--|
| | ID harrow manifestation |
| | Name: |
| | Class |
| | Print? |
| | 1. What is the purpose of the additive term |
| | A) To prevent the growth of microbes in the fuel system B) To prevent the growth of microbes in the fuel system C) To make the fuel flow better at high temperatures C) To make the fuel flow better at high temperatures |
| | 2. What is the purpose of water / alcohol injection in a toronte engine |
| | A) Improves engine cooling B) Reduces the air inlet temperature C) Increases take-off thrust C) Increases take-off thrust |
| | 3. The low pressure fuel filter will trap particles then the variable pressure filter. |
| | A) Bigger |
| | B) smaller C) lighter |
| | Why is the fuel / oil heat exchanger (oil cooler) placed between the boost |
| | pump and the inlet of the low pressure filter? |
| | A) To prevent ice crystals in the fuel from clogging the filter |
| | B) To keep the fuel at the correct viscosity C) To help atomize the fuel |
| | 5. During what period does the fuel pump bypass valve open and remain open? |
| | A) When the fuel pump pressure is greater than the demand of the engine B) When the boost pump pressure is greater than fuel pump pressure C) When the fuel pump output is greater than the demand of the carburetor |
| 6. | What is the purpose of the fuel transfer ejectors? |
| | A) To supply fuel under pressure to the engine-driven pump B) To assist in the transfer of fuel from the main tank to the poost pu |
| | sump |
| | C) To transfer fuel from the boost pump sump to the wing cant |
| | The fuel pump relief valve directs excess fuel to the |
| | A) Fuel tank return line |
| | B) Inlet side of the fuel pump |
| | C) Inlet side of the fuel strainer |
| | |
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| 16. A duplex fuel pozzla |
|---|
| A) the inner fuel outlet B) the outer fuel outlet C) the outer fuel inter |
| 17. The pressurizing and dump valve will allow fuel to the primer cubict of the |
| A) only at high RPM B) only until the engine driven fuel pump has enough private to open the C) only at 100% |
| 18. When a turbine engine is supplied with too much fuel at a low airflow, the likely result will be: |
| A) Lean Die-out B) Rich mixture C) Rich Blow-out |
| 19. The electronic fuel control unit used on the most modern jet engines receives inputs: |
| A) only from the engine sensors B) from the cockpit controls and engine sensors C) as analog information |
| 20. Fuel flow through a dual line duplex fuel nozzle is divided: |
| A) internally B) after entering the nozzle C) externally |
| 21. A hydromechanical fuel control unit normally has what types of inputs? |
| A) Pressure, Electrical, RPM B) Digital, Electrical, Temperature C) RPM, Pressure, Temperature |
| 22. Who is authorized to perform repairs to a turbine engine fuel control unit? |
| A) A mechanic with a powerplant rating B) A mechanic with both airframe and powerplant ratings C) An authorized repair station |
| 23. Most fuel control units can be divided into two units, the section which senses the engine parameters and the section which provides the proper fuel flow for the given conditions. |
| A) metering, computing |
| B) computing, metering |
| C) RPM, Pressure |
| |
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| <text><text><text><text><list-item></list-item></text></text></text></text> | A) Adjust a standard hydromechanical fuel control unit effective engine operation B) Develops the commands to various actuators to control of C) Controls engine operation according to ambient terms and humidity 32. The Active Clearer | engine pagemeters perature, pressure |
| <text><text><text><list-item></list-item></text></text></text> | engine efficiency by | estem aids turbine |
| An enserve the endergoing engine speed to maintain a defined EPR An enserve the endergoing engine speed to maintain a defined EPR An enserve the endergoing engine speed to maintain a defined EPR An enserve the endergoing engine speed to maintain a defined EPR An enserve the endergoing engine speed to maintain a defined EPR An enserve the endergoing to the advect of the enserve the endergoing engine speed to maintain a defined EPR An enserve the endergoing on the advect of the enserve the endergoing engine transmission of the endergoing engine transmission of the enserve the endergoing engine speed to maintain a defined EPR An endergoing engine transmission of the endergoing engine engine of the endergoing engine engine | A) Adjusting stator vane position according to openation power requirements B) Ensuring the turbine blade to engine case clear minimum by controlling case temperatures C) Automatical statements | ng conditions and nce re kept to a |
| Mit should be checked / changed to ensure the value of a turbine engine intermedication of an alternation to lead to use? 9. Per specific gravity setting 9. Per submit with adjustment to be a set of the s | 33 What also have adjusting engine speed to maintain a der | red EPR |
| A. Pues Beaching anyonic registry of the second part of the s | performance check if an alternate fuel is to be used? | of a turbine engine |
| An ended calculation An ended accession below way to obtain accurate on-site temperature prior to below the infimiting is to: A calculation of the ended of the ender the | A) Fuel specific gravity setting B) Maximum RPM adjustment C) EPR gauge calibration | |
| A. Me generally acceptable way to obtain accurate on-site temperature prior to performing engine trimming is to A. Call the control tower to obtain field temperature B. Observed the reading on the aircraft Outside Air Traperature (OAT) guege B. Tamperature reading stabilizes 35. An aircraft should be facing into the wind when trimming an engine. However, if the velocity of the wind blowing into the intake is excessive, it likely to cause a B. Taim setting resulting in engine oversteed B. Taim setting resulting in engine oversteed C. Generally, the practice when trimming an engine is to B. Turn all accessory bleed air off B. Turn all accessory bleed air off B. Turn all accessory bleed air off Make adjustment (as necessary) for all engines on the same aircraft with accessory bleed air settings the same, either on or off Which type of fuel control is used on most of today's turbine engines? A. Electromechanical B. Mechanical C. Hydromechanical or electronic | 24 The concernity | |
| A. Call the control tower to obtain field temperature B. Song and the reacting on the aircraft Outside Air Temperature (OAT). B. And a thermometer in the shade of the nose wheel-well until the temperature reading stabilizes An aircraft should be facing into the wind when trimming an engine, fuely to cause a An aircraft should be facing into the wind blowing into the intake is excessive, it is a stable of the mose wheel-well until the temperature reading and the mose wheel-well until the temperature reading to cause a An aircraft should be facing into the wind blowing into the intake is excessive, it is a stable of the mose the intake is excessive, it is a stable of the mose the intake is excessive, it is a stable of the mose the stable of the mose the stable is excessive, it is a stable of the mose the stable is excessive of the visit of the stable of the mose the intake is excessive, it is a stable of the mose the stable is excessive, it is a stable of the mose the stable is excessive. An air and the practice when trimming an engine is to the wind and excessory bleed air off B. Turn all accessory bleed air off B. Mach adjustment (as necessary) for all engines on the same aircraft with accessory bleed air settings the same, either on or off Which type of fuel control is used on most of today's turbine engines? A. Electromechanical B. Mechanical B. Mechanical or electronic | performing engine trimming is to | temperature prior to |
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| 6) False high compression and turbine dicharge pressure and a subsequent low trim 36. Generally, the practice when trimming an engine is to A) Turn all accessory bleed air off B) Turn all accessory bleed air on C) Make adjustment (as necessary) for all engines on the same aircraft with accessory bleed air settings the same, either on or off Which type of fuel control is used on most of today's turbine engines? A) Electromechanical B) Mechanical C) Hydromechanical or electronic | B) Trim setting resulting in engine oversteed | |
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| A) Electromechanical B) Mechanical C) Hydromechanical or electronic | C) Make adjustment (as necessary) for all engines | on the same aircraft with |
| Which type of fuel control is used on most of today's turbine engines? A) Electromechanical B) Mechanical C) Hydromechanical or electronic | accessory bleed air settings the same, either on | or off |
| A) Electromechanical B) Mechanical C) Hydromechanical or electronic | Which type of fuel control is used on most of today | 's turbine engines? |
| B) Mechanical C) Hydromechanical or electronic | A) Electromechanical | |
| C) Hydromechanical or electronic | B) Mechanical | |
| | C) Hydromechanical or electronic | |
| | | |
| | | |
| | | |

38. Under which of the following conditions will the trimming of a turbine engine be most accurate? A) High wind and high moisture
B) High moisture and low wind
C) No wind and low moisture A mixture ratio of 11:1 normally refers to 39. A) a stoichiometric mixture
B) 1 part air to 11 parts fuel
C) 1 part fuel to 11 parts air In turbine engines that utilize a pressurization and dump valve, the dump 40. portion of the valve A) Cuts off fuel flow to the engine fuel manifold and dumps the manifold fuel Into the combustor to burn just before the engine shuts down B) Drains the engine manifold lines to prevent fuel boiling and subservent deposits in the lines as result of residual engine heat (at engine shut own) deposits in the lines as result of residual engine near (at engine in order to provide for quick engine
 C) Dumps extra fuel into the engine in order to provide for quick engine acceleration during rapid throttle advancement

TURBINE ENGINE FUEL METERING - TEST SET "D"

- 1. The purpose of the computing section in the hydro mechanical fuel control is to:
 - A) position metering valve to obtain the proper power output
 - B) control rate of acceleration and deceleration
 - C) both A and B

2. Name two characteristics of Jet B fuel.

- A) Gasoline base fuel & similar to JP 5
- B) Gasoline base fuel & similar to JP 4
- C) Kerosene base fuel & similar to JP 4
- 3. Name the two discharge passages inside a Duplex nozzle.
 - A) Primary passage and internal passage
 - B) Secondary passage and primary passage
 - C) Main passage and auxiliary passage
- 4. The primary function of the fuel shut-off in the hydro mechanical fuel control is to:
 - A) limit the range of movement of the main metering valve
 - B) provide positive shut-off of fuel for shutdown
 - C) bypass excess fuel back to pump inlet
- 5. The advantage of Duplex nozzle has over a Simplex nozzle is:
 - A) provide better atomization
 - B) provide a wide range of engine operation
 - C) All of. the above
- 6. What does the pneumatic computing section, of the hydro pneumatic fuel control, consists of?
 - A) N1 compressor & N2 compressor
 - B) N1 governor & N2 Governor
 - C) N1 turbine & N2 turbine

- 7. Name one type of a positive displacement pump and one type of a variable displacement pump.
 - A) Positive Gear pump & Variable Boost pump
 - B) Positive Centrifugal pump & Variable Spur Gear pump
 - C) Positive Boost pump & Variable Rotary vane pump
- 8. Name two types of electronic engine control.
 - A) Supervisory & Full authority
 - B) Super authority & full automatic
 - C) Fully supervised & superiority
- 9. The primary function of a fuel pump is to:
 - A) meter flow of fuel to the engine
 - B) deliver continuous supply of fuel to engine
 - C) draw fuel for lube system cooling
- 10. Name two advantages of an Air spray nozzle.
 - A) Reduces carbon formation and avoids local fuel rich formation
 - B) Has a passage for spilling fuel back to pump inlet and reduces fuel consumption
 - C) Reduces fuel consumption and carbon formation
- 11. Which of the following **is not** the benefit of Electronic Engine Control (EEC)?
 - A) Reducing operator workload
 - B) Reduce reliability
 - C) Reducing maintenance costs
- 12. Where would you find fuel transfer ejectors?
 - A) The lowest point of the fuel tank
 - B) The lowest point of oil pump
 - C) Cockpit control

- 13. Name a disadvantage of a Spill type nozzle.
 - A) Excess heat may generate when a large volume of fuel is being re-circulated to the inlet
 - B) It allows the supply of fuel to the swirl chamber at high pressure at all times
 - C) The secondary discharge passage only operates at high engine demands
- 14. What is the function of a fuel heater?
 - A) To transfer fuel from boost pump sump to engine inlet
 - B) To prevent entrained water from freezing in fuel
 - C) To supply continuous flow of fuel to engine
- 15. What does the P & D valve consist of?
 - A) Inlet check valve and bypass valve
 - B) Pressurization valve and dump valve
 - C) Main metering valve and fuel shut off valve
- 16. What are the heat exchanging mediums used in fuel heaters?
 - A) Engine oil
 - B) Bleed air
 - C) Both A & B
- 17. What type of nozzle would most likely incorporate a P & D valve?
 - A) Simplex nozzle
 - B) Duplex nozzle
 - C) Air spray nozzle
- 18. During normal engine operations, what are the positions of the pressurization valve (OPEN or CLOSE) and the dump valve (OPEN or CLOSE)?
 - A) Pressurization valve Open/Dump valve Close
 - B) Pressurization valve Open/Dump valve Open
 - C) Pressurization valve Close/Dump valve Open

- 19. The fuel filters on turbine fuel metering normally located:
 - A) between boost pump and fuel transfer ejectors
 - B) between tank outlet and fuel metering device
 - C) at the lowest point of the engine
- 20. What would happen if a fuel nozzle is clogged or plugged?
 - A) A distorted spray pattern will occur
 - B) The system will switch to a set of back -up nozzles
 - C) Fuel will not burn at all
- 21. Pressurizing valve used in turbine fuel metering system for the purpose of:
 - A) drain the fuel manifold during engine shutdown
 - B) bypass fuel back to the pump inlet
 - C) allow fuel to flow to the nozzle through the secondary discharge passage
- 22. Positive displacement pumps means:
 - A) pump that produce high pressure flow
 - B) specific quantity of fuel is delivered for every revolution
 - C) fuel is delivered according to needs of the system
- 23. Select two types of atomizing nozzles from below.
 - A) T shaped nozzle and spill type nozzle
 - B) Simplex nozzle and duplex nozzle
 - C) Air spray nozzle and cane shaped nozzle
- 24. The function of the dump valve is to:
 - A) drain the fuel manifold during engine shutdown
 - B) bypass fuel back to the pump inlet
 - C) allow fuel to flow to the nozzle through the secondary discharge passage

- 25. Name two locations where water may be injected.
 - A) Compressor inlet and exhaust section
 - B) Compressor inlet and diffuser section inlet
 - C) Diffuser outlet and tail pipe section
- 26. How does a Vaporizing tube vaporize the mixture inside it?
 - A) By flowing the fuel through a swirl chamber
 - B) Heated air around the tube
 - C) Using high velocity air
- 27. Where is fuel nozzles located in a gas turbine engine?
 - A) Diffuser outlet
 - B) Inlet of combustion chamber
 - C) Both A & B
- 28. What type of nozzle is first used on early jet planes?
 - A) T shaped nozzle
 - B) Vaporizing nozzle
 - C) Simplex nozzle

29. The second of fuel flow during acceleration and deceleration is to prevent what two conditions?

- A) Rich blowout and excess fuel condition
- B) Rich blowout and lean die-out
- C) Flame out and vapor lock
- 30. What would the electronic engine control (EEC) do it there is an existing fault in the system that affects engine operation?
 - A) Revert control to hydro mechanical control unit
 - B) Nothing, EEC would continue as normal
 - C) Revert controls to pilot and co-pilot

- 31. Automatic fuel control units senses:
 - A) fuel lean or rich mixture
 - B) power lever position
 - C) fuel mixture control

32. At when direction will the turbine engine trim adjustment be made:

- A) increase direction
- B) decrease direction
- C) decrease direction after an over adjustment
- 33. A typical supervisory electronic engine control (EEC) senses....
 - A) Humidity of the air
 - B) Air pressure only
 - C) Pressure and temperature
- 34. Trim adjustments are not made in the _____ direction because this could lead to slack in the fuel control and incorrect setting at high power levels.
 - A) decrease
 - B) increase
 - C) it can be at any position
- 35. Field adjustments made to the turbine engine fuel control are limited to ______ speed adjustment.
 - A) lower rpm and lower
 - B) idle rpm and maximum
 - C) idle rpm an minimum
- 36. What is the limiting factor that limits the engine producing maximum power or maximum rpm?
 - A) EGT
 - B) Fuel flow or EPR
 - C) Both A and B are correct

- 37. A supervisory electronic engine control (EEC) is a system that receives engine operating information.
 - A) True
 - B) False
 - C) Either A or B
- 38. If an alternative fuel is to be used, what should be checked or changed to ensure the validity of a turbine engine performance check?
 - A) Maximum rpm setting adjustment
 - B) Fuel specific gravity setting
 - C) EPR gauge calibration
- 39. Generally, the practice when trimming an engine is to.....
 - A) Turn all accessory bleed air "OFF"
 - B) Turn all accessory bleed air "ON"
 - C) Make adjustments (as necessary) after all engines on the same aircraft with accessory bleed air setting the same either "ON' or "OFF"
- 40. If a performance check is made on an engine using an alternate fuel, the _____ setting should be checked and changed as necessary.
 - A) fuel pressure
 - B) specific gravity
 - C) none of the above
- 41. The function of the boost pump is to provide:
 - A) fuel velocity for starting
 - B) pressure for starting
 - C) fuel pressure for starting
- 42. The function of fuel transfer ejector is to transfer fuel from:
 - A) main tank to boost pump sump
 - B) boost pump to main tank
 - C) tanker to aircraft tank

43. The secondary discharge passage would supply fuel through the fuel nozzle when the:

- A) engine temperature is high
- B) pressure build up overcoming the pressurizing valve
- C) pilot shut down the engine
- 44. What engine parameter will be observed by the fuel control unit?
 - A) Compressor inlet temperature (CIT)
 - B) Compressor discharge temperature (CDT)
 - C) Turbine inlet pressure (TIP)
- 45. The purpose of the turbine engine fuel metering is to:
 - A) supply fuel to the engine
 - B) schedule proper amount of fuel to the engine
 - C) schedule proper amount of air to the engine
- 46. Trimming a turbine engine mean:
 - A) ensuring availability of maximum thrust output when needed
 - B) produce as much power the engine is capable of producing
 - C) reduce fuel and carbon contamination
- 47. Exhaust gas temperature (EGT) is primarily a function of turbine efficiency and:
 - A) increase direction
 - B) decrease direction after adjustment
 - C) decrease direction
- 48. Fuel nozzles also referred to as:
 - A) fuel distributors
 - B) oil distributors
 - C) all of the above

- 49. The compressor variable stator vane (VSV) portion of the electronic engine control (EEC) controls ______ position.
 - A) inlet guide vane
 - B) stator vane
 - C) rotary vane
- 50. When trimming of the FCU sudden fluctuation of the fuel flow gauge was observed , the probable cause would be :
 - A) malfunction of the FCU
 - B) incorrect of the throttle rigging
 - C) incorrect positioning of the aircraft

TURBINE FUEL METERING SYSTEM - TEST SET "E"

- 1. Adjusting the idle speed and maximum thrust produced by a turbine engine is defined as:
 - A) trimming the engine
 - B) calibrating the engine
 - C) adjusting the engine
- 2. The ratio between the turbine outlet pressure and the compressor inlet pressure is called the:
 - A) thrust ratio
 - B) engine pressure ratio
 - C) exhaust pressure ratio
- 3. On some fuel controls an adjustment can be made to compensate when an alternate fuel is used. This adjustment is:
 - A) a part power trim adjustment
 - B) a cushion or spring back check
 - C) a specific gravity adjustment
- 4. When trimming a turbine engine , adjustments should be made towards:
 - A) the increase direction only
 - B) the decrease direction only
 - C) decrease after adjustment was made
- 5. The purpose of turbine engine fuel pumps with dual high pressure gear arrangement incorporate a shear's shaft is to:
 - A) prevent damage to the engine compressor section
 - B) allow fuel to be pumped through one gear set if the other should fail
 - C) prevent damage to the engine turbine section
- 6. What type of fuel filter are commonly used on a turbine engine:
 - A) coarse mesh
 - B) wafer disc
 - C) micron

- 7. Which type fuel nozzles provide a single spray pattern with an internal check valve to prevent dribbling?
 - A) Duplex single line design
 - B) Duplex dual line design
 - C) Simplex design
- 8. The ideal condition for trimming a turbine engine are:
 - A) no wind, low humidity, standard temperature and pressure
 - B) high humidity and high wind
 - C) no wind, high humidity, and high temperature
- 9. Which of the below are the variable sensed by the fuel control to control the amount of fuel metered to the engine?
 - A) Compressor discharge pressure
 - B) Compressor inlet pressure
 - C) Turbine discharge pressure
- 10. The main difference between JET A-1 fuel compared to JET A is Jet A-1 has a _____ than Jet A.
 - A) higher flash point
 - B) higher btu/lb rating
 - C) lower freezing point
- 11. Which of the following **is NOT** a factor in the operation of an automatic fuel control unit used on turbine engines?
 - A) Compressor inlet air density
 - B) Mixture control position
 - C) Throttle position
- 12. When trimming a turbine engine, the fuel control is adjusted to:
 - A) produce as much power as the engine is capable of producing
 - B) allow the engine to produce maximum RPM without regard to power output
 - C) set idle RPM and maximum speed EPR

- 13. If an alternate fuel is to be used, what should be checked or changed to ensure the validity of a turbine engine performance check?
 - A) Fuel specific gravity adjustment
 - B) Maximum RPM adjustment
 - C) EPR gauge calibration
- 14. How does an atomizing nozzle achieve atomization?
 - A) Employs low velocity air at high fuel flow rate
 - B) Employs high velocity air at low fuel flow rate
 - C) Employs high velocity fuel at low fuel flow rate
- 15. The primary purpose is a turbine engine fuel control unit trimmed is to:
 - A) obtain maximum thrust output when desired
 - B) properly position the power levers
 - C) adjust the idle RPM
- 16. Which type of fuel control is used on most of today's turbine engines?
 - A) Electromechanical only
 - B) Mechanical only
 - C) Hydro mechanical or electronic
- 17. To ensure an accurate trim setting, all engine bleed air:
 - A) required high pressure and low velocity
 - B) must be turned OFF
 - C) must be turned ON
- 18. What effect does high atmospheric humidity have on the operation of a jet engine?
 - A) Decrease engine pressure ratio
 - B) Decrease compressor and turbine RPM
 - C) Has little or no effect

- 19. What should be the positions of the pressurization valve and the dump valve in a jet engine fuel system when the engine is shut down?
 - A) Pressurization valve closed; dump valve open
 - B) Pressurization valve open; dump valve open
 - C) Pressurization valve closed; dump valve closed
- 20. Which of the following *is NOT* an input parameter for a turbine engine fuel control unit?
 - A) Compressor inlet pressure
 - B) Ambient humidity
 - C) Compressor inlet temperature
- 21. The adjustments made to a fuel control when using and alternate fuel is the ______ adjustment.
 - A) specific gravity
 - B) trim
 - C) power lever

22. Most trim adjustments are made using a:

- A) part power stop
- B) low power stop
- C) full power stop
- 23. Final trim adjustment is made in the _____ direction.
 - A) normal
 - B) increase
 - C) decrease
- 24. What type of most high-pressure fuel pumps in Fuel Control Unit?
 - A) Spur gear
 - B) Vane
 - C) Centrifugal

- 25. When the burning fuel leaves visible steaks on the components contact due to nozzle malfunctions, this is referred as:
 - A) hot burning strike
 - B) hot streaking
 - C) hot striking
- 26. Which of the following **is not** the benefit of Electronic Engine Control (EEC)?
 - A) Reducing operator workload
 - B) Reduce reliability
 - C) Reducing maintenance costs
- 27. What limits the CLOSED position of the main metering valve in any type of hydraulic fuel control?
 - A) Governor servo
 - B) Minimum flow stop
 - C) Both A and B are correct
- 28. In most Hydro Mechanical Fuel Control Unit, when the power is moved, the device in the Fuel Control Unit that is directly affected is the:
 - A) governor speeder spring
 - B) metering pin
 - C) differential pressure regulator
- 29. When the centrifugal weights of a flyweight speed sensing device are "**tipped out**" the condition is called:
 - A) under-speed
 - B) on-speed
 - C) over-speed
- 30. A fuel nozzle that gives two different spray patterns is known as _____ nozzle.
 - A) simplex
 - B) duplex
 - C) vaporizer

- 31. In order to stabilize cams, springs and linkage within the fuel control, manufacturers generally recommend that all final turbine engine trim adjustments be made in the:
 - A) decrease direction
 - B) decrease direction after over-adjustment
 - C) increase direction
- 32. A supervisory electronic engine control (EEC) is a system that receives engine operating information and:
 - A) develops the commands to various actuators to control engine parameters
 - B) adjusts a standard hydro mechanical fuel control unit to obtain the most effective engine operation
 - C) controls engine operation according to ambient temperature, pressure and humidity
- 33. The main advantage of an air-spray nozzle is to:
 - A) reduce fuel contamination
 - B) reduce a combustion rate
 - C) reduce carbon formation
- 34. Simplex nozzle consist of:
 - A) atomizer & vaporize only
 - B) a chamber & a fixed-area atomizing orifice
 - C) primary & secondary discharge passage
- 35. The generally acceptable way to obtain accurate on-site temperature prior to performing engine trimming is to:
 - A) hang a thermometer in the shade of the nose wheel-well until the temperature reading stabilizes
 - B) call the control tower to obtain field temperature
 - C) observe the reading on the aircraft Outside Air Temperature (OAT) gauge
- 36. An aircraft should be facing into the wind when trimming an engine. However, if the velocity of the wind blowing into the intake is excessive, it is likely to cause a:
 - A) false low exhaust gas temperature reading
 - B) trim setting resulting in engine overspeed
 - C) false high compression and turbine discharge pressure, and a subsequent low trim

- 37. Turbine engine hydro mechanical fuel control units are divided into what sections?
 - A) Computing/metering
 - B) Pressure/metering
 - C) Scheduling/metering
- 38. A properly calibrated turbine engine Fuel Control Unit would deliver fuel in what way?
 - A) Constant volume/varying pressure
 - B) Constant pressure/varying volume
 - C) Varying pressure/varying volume
- 39. The most common microbiocidal agent added to fuel is:
 - A) Ethylene glycol
 - B) Tricresyl phosphate
 - C) Prist
- 40. A condition caused by too much fuel in the combustion chamber for the air flow, while the engine is operating at cruise or above is called a:
 - A) rich blow out
 - B) lean die out
 - C) lean blow out
- 41. The engine flame-out when applying take-off power, what would be the possible cause?
 - A) Fuel pump malfunction
 - B) Fuel pump relief valve open
 - C) Fuel control malfunction
- 42. What indication in the aircraft to indicated that the engine "HOT START"?
 - A) High egt
 - B) High fuel flow
 - C) High fuel pressure

- 43. The engine motors over but does not start-good fuel flow indication but no exhaust gas temperature, the possible cause could be:
 - A) Pressurizing valve stuck open
 - B) Dump valve partially open
 - C) Pressurizing valve partially open
- 44. What type of nozzle is first used on early jet planes?
 - A) Simplex nozzle
 - B) T shaped nozzle
 - C) Vaporizing nozzle
- 45. The second of fuel flow during acceleration and deceleration is to prevent what two conditions?
 - A) Rich blowout and excess fuel condition
 - B) Rich blowout and lean die-out
 - C) Flame out and vapor lock
- 46. The function of the boost pump is to provide:
 - A) fuel pressure for starting
 - B) fuel for starting
 - C) pressure for starting
- 47. The function of fuel transfer ejector is to transfer fuel from:
 - A) main tank to boost pump sump
 - B) boost pump to main tank
 - C) tanker to aircraft tank

48. The secondary discharge passage would supply fuel through the fuel nozzle when the:

- A) engine temperature is high
- B) pressure build up overcoming the pressurizing valve
- C) pilot shut down the engine
- 49. What engine parameter will be observed by the fuel control unit?
 - A) Compressor discharge temperature (CDT)
 - B) Turbine inlet pressure (TIP)
 - C) Compressor inlet temperature (CIT)
- 50. The purpose of the turbine engine fuel metering is to:
 - A) supply fuel to the engine
 - B) schedule proper amount of fuel to the engine
 - C) schedule proper amount of air to the engine

TURBINE ENGINE FUEL METERING TEST

- 1. What is the purpose of the additive Prist?
 - A) To prevent icing in the fuel system
 - B) To prevent the growth of microbes in the fuel system 7-13
 - C) To make the fuel flow better at high temperatures
- 2. What is the purpose of water / alcohol injection in a turbine engine?
 - A) Improves engine cooling
 - B) Reduces the air inlet temperature
 - C) Increases take-off thrust 7-16
- 3. The low pressure fuel filter will trap _____ particles then the high pressure filter.
 - A) Bigger

7-15

- B) smaller
- C) lighter
- 4. Why is the fuel / oil heat exchanger (oil cooler) placed between the boost pump and the inlet of the low pressure filter?
 - A) To prevent ice crystals in the fuel from clogging the filter 7-15
 - B) To keep the fuel at the correct viscosity
 - C) To help atomize the fuel
- 5. During what period does the fuel pump bypass valve open and remain open?
 - A) When the fuel pump pressure is greater than the demand of the engine 7-14
 - B) When the boost pump pressure is greater than fuel pump pressure
 - C) When the fuel pump output is greater than the demand of the carburetor
- 6. Which of the following statements concerning a centrifugal-type fuel boost pump located in a fuel supply tank is NOT true?
 - A) Air and fuel vapors do not pass through a centrifugal-type
 - B) Fuel can be drawn through the impeller section of the pump when it is not in operation
 - C) The centrifugal-type pump is classified as a positive displacement pump 7-13

- 7. What is the purpose of the fuel transfer ejectors?
 - A) To supply fuel under pressure to the engine-driven pump
 - **B)** To assist in the transfer of fuel from the main tank to the boost pump sump 7-13
 - C) To transfer fuel from the boost pump sump to the wing tank
- 8. What is the purpose of an engine-driven fuel pump by pass valve?
 - A) To divert the excess fuel back to the main tank
 - B) To prevent a damaged or inoperative pump from blocking the fuel flow of another pump in series with it
 - C) To divert the excess fuel from the pressure side of the pump to the inlet side of the pump 7-14
- 9. The fuel pump relief valve directs excess fuel to the
 - A) Fuel tank return line
 - B) Inlet side of the fuel pump 7-14
 - C) Inlet side of the fuel strainer
- 10. The primary condition(s) that allows(s) microorganisms to grow in the fuel in aircraft fuel tanks is (are):
 - A) Warm temperatures and frequent fueling
 - B) The presence of water7-13
 - C) The presence of dirt or other particulate contamination
- 11. The fuel system of aircraft certified in the standard classification must include which of the following?
 - A) An engine-driven fuel pump and at least one auxiliary pump per engine
 - **B)** A positive means of shutting off the fuel to all engines 7-12
 - C) A reserve supply of fuel, available to the engine only after selection by the flight crew, sufficient to operate the engines at least 30 minutes at METO power
- 12. Where should the main fuel strainer be located in the aircraft fuel system?
 - A) Downstream from the wobble pump check valve
 - B) At the lowest point in the fuel system7-15
 - C) At any point in the system lowers than the carburetor strainer

- 13. Where physical separation of the fuel lines from electrical wiring or conduit is impracticable, locate the fuel line
 - A) Below the wiring and clamp the line securely to the airframe structure 7-13
 - B) Above the wiring and clamp the line securely to the airframe structure
 - C) Inboard of the wiring and clamp both securely to the airframe structure
- 14. A fuel strainer or filter must be located between the
 - A) Boost pump and tank outlet
 - B) Tank outlet and the fuel metering device 7-16
 - C) Boost pump and the engine-driven fuel pump
- 15. Fuel pressure produced by the engine-driven fuel pump is adjusted by the
 - A) Bypass valve adjusting screw
 - B) Relief valve adjusting screw 7-14
 - C) Engine-driven fuel pump adjusting screw
- 16. Kerosene is used as a turbine engine fuel because
 - A) Kerosene has very high volatility which aids in ignition and lubrication
 - B) Kerosene has more heat energy per gallon and lubricates fuel system components 7-12
 - C) Kerosene does not contain any water
- 17. Which of the following turbine fuel filters has the greatest filtering action?
 - A) Micron 7-16
 - B) Small wire mesh
 - C) Stacked charcoal
- 18. Fuel cross feed systems are used in aircraft to
 - A) Purge the fuel tanks
 - B) Jettison fuel in an emergency
 - C) Maintain aircraft stability

19. Which of the following is <u>not</u> a method used to meter jet fuel?

- A) Pneumatically
- B) Hydro mechanical
- C) Electromechanical 7-61

20. A duplex fuel nozzle supplies a wide pattern starting fuel through:

- A) the inner fuel outlet
- B) the outer fuel outlet
- C) the outer fuel inlet
- 21. The pressurizing and dump valve will allow fuel to the primary outlet of the fuel nozzle:

7-66

- A) only at high RPM
- B) only until the engine driven fuel pump has enough pressure to open the main passage 7-68
- C) only at 100%
- 22. When a turbine engine is supplied with too much fuel at a low airflow, the likely result will be:
 - A) Lean Die-out
 - B) Rich mixture
 - C) Rich Blow-out
- 23. The electronic fuel control unit used on the most modern jet engines receives inputs: 65(B)

7-

7-60

- A) only from the engine sensors
- B) from the cockpit controls and engine sensors as digital signals
- C) as analog information
- 24. Fuel flow through a dual line duplex fuel nozzle is divided:
 - A) internally
 - B) after entering the nozzle
 - C) externally

7-66

25. A hydro mechanical fuel control unit normally has what types of inputs?

- A) Pressure, Electrical, RPM
- **B)** Digital, Electrical, Temperature
- C) RPM, Pressure, Temperature 7-60
- 26. Who is authorized to perform repairs to a turbine engine fuel control unit?
 - A) A mechanic with a powerplant rating
 - B) A mechanic with both airframe and powerplant ratings
 - C) An authorized repair station 7-69
- 27. Electromechanical fuel controls are most commonly used:
 - A) on non-flight engines
 - B) on turboprop engines
 - C) on high bypass turbofan engines

28. Most fuel control units can be divided into two units, the ______ section which senses the engine parameters and the ______ section which provides the proper fuel flow for the given conditions.

7-60

- A) metering, computing
- B) computing, metering 7-60
- C) RPM, Pressure

29. Where the engine fuel shutoff valve is usually located?

- A) Aft of the firewall
- B) Adjacent to the fuel pump
- C) Downstream of the engine-driven fuel pump 7-61
- 30. In a supervisory EEC system, any fault in the EEC that adversely affects engine operation
 - A) Causes redundant or backup units to take over and continue normal operation
 - B) Usually degrades performance to the extent that continued operation can cause damage to the engine
 - C) Causes an immediate reversion to control by the hydro mechanical fuel control unit 7-64

- 31. What are the principal advantages of the duplex fuel nozzle used in many turbine engines?
 - A) Restricts the amount of fuel flow to a level where more efficient and complete burning of the fuel is achieved
 - B) Provides better atomization and uniform flow pattern 7-66
 - C) Allows a wider range of fuels and filter to be used
- 32. It is necessary to control acceleration and deceleration rates in turbine engines in order to
 - A) Prevent blowout or die-out 7-60
 - B) Prevent over temperature
 - C) Prevent friction between turbine wheels and the case due to expansion and contraction
- 33. What is the purpose of the flow divider in a turbine engine duplex fuel nozzle?
 - A) Allows and alternate flow of fuel if the primary flow clogs or is restricted
 - B) Creates the primary and secondary fuel supplies 7-66
 - C) Provides a flow path for bleed air which aids in the atomization of fuel
- 34. What causes the fuel divider valve to open in a turbine engine duplex fuel nozzle?
 - A) Fuel pressure

7-66

- B) Bleed air after the engine reaches idle RPM
- C) An electricity operated solenoid
- 35. A supervisory Electronic Engine Control (EEC) is a system that receives engine operating information and
 - A) Adjusts a standard hydro mechanical fuel control unit to obtain the most effective engine operation
 - B) Develops the commands to various actuators to control engine parameters
 - C) Controls engine operation according to ambient temperature, pressure and humidity 7-64
- 36. A full-authority EEC is a system that receives all the necessary data for engine operation and
 - A) Adjust a standard hydro mechanical fuel control unit to obtain the most effective engine operation
 - B) Develops the commands to various actuators to control engine parameters 7-65
 - C) Controls engine operation according to ambient temperature, pressure and humidity

- 37. The Active Clearance Control (ACC) portion of an EEC system aids turbine engine efficiency by
 - A) Adjusting stator vane position according to operating conditions and power requirements
 - **B)** Ensuring the turbine blade to engine case clearance are kept to a minimum by controlling case temperatures 7-64
 - C) Automatically adjusting engine speed to maintain a desired EPR
- 38. What should be checked / changed to ensure the validity of a turbine engine performance check if an alternate fuel is to be used?
 - A) Fuel specific gravity setting 7-60
 - B) Maximum RPM adjustment
 - C) EPR gauge calibration
- 39. The generally acceptable way to obtain accurate on-site temperature prior to performing engine trimming is to
 - A) Call the control tower to obtain field temperature
 - B) Observed the reading on the aircraft Outside Air Temperature (OAT) gauge
 - C) Hang a thermometer in the shade of the nose wheel-well until the temperature reading stabilizes 7-70

40. An aircraft should be facing into the wind when trimming an engine. However, if the velocity of the wind blowing into the intake is excessive, it likely to cause a

- A) False low exhaust gas temperature reading
- B) Trim setting resulting in engine overspeed
- C) False high compression and turbine discharge pressure and a subsequent low trim 7-70
- 41. Generally, the practice when trimming an engine is to
 - A) Turn all accessory bleed air off 7-70
 - B) Turn all accessory bleed air on
 - C) Make adjustment (as necessary) for all engines on the same aircraft with accessory bleed air settings the same, either on or off
- 42. Which type of fuel control is used on most of today's turbine engines?
 - A) Electromechanical
 - B) Mechanical
 - C) Hydro mechanical or electronic 7-60

43. Under which of the following conditions will the trimming of a turbine engine be most accurate?

- A) High wind and high moisture
- B) High moisture and low wind
- C) No wind and low moisture 7-70
- 44. The density of air is very important when mixing fuel and air to obtain a correct fuel-to-air ratio. Which of the following weighs the most?
 - A) 75 parts of dry air and 25 parts of water vapor 7-70
 - B) 100 parts of dry air
 - C) 50 parts of dry air and 50 parts of water vapor
- 45. A mixture ratio of 11:1 normally refers to
 - A) a stoichiometric mixture
 - **B)** 1 part air to 11 parts fuel
 - C) 1 part fuel to 11 parts air 7-69
- 46. In turbine engines that utilize a pressurization and dump valve, the dump portion of the valve
 - A) Cuts off fuel flow to the engine fuel manifold and dumps the manifold fuel into the combustor to burn just before the engine shuts down
 - B) Drains the engine manifold lines to prevent fuel boiling and subsequent deposits in the lines as result of residual engine heat (at engine shutdown)
 7-68
 - C) Dumps extra fuel into the engine in order to provide for quick engine acceleration during rapid throttle advancement
- 47. What effect does high atmospheric humidity have on the operation of a jet engine?
 - A) Decreases engine pressure ratio
 - B) Decreases compressor and turbine RPM
 - C) Has little or no effect 7-70
- 48. What are the positions of the pressurization valve and the dump valve in a jet engine fuel system when the engine is shut down?

7-68

- A) Pressurization valve closed, dump valve open
- B) Pressurization valve open, dump valve open
- C) Pressurization valve closed, dump valve closed

49. Which of the following is NOT an input parameter for a turbine engine fuel control unit?

- A) Compressor inlet pressure
- B) Compressor inlet temperature
- C) Ambient humidity
- 50. The primary purpose of the air bleed openings used with continuous flow fuel injector nozzles is to

7-60

- A) Provide for automatic mixture control
- B) Lean out the mixture
- C) Aid in proper fuel vaporization 7-65

- 1. What factor is not used in the operation of an aircraft gas turbine engine fuel control unit
 - a. Compressor inlet air temperature
 - b. Power lever position
 - c. Mixture control position
- 2. What causes the fuel divider valve to open in a turbine engine duplex nozzle
 - a. Fuel pressure
 - b. Bleed air after the engine reaches idle RPM
 - c. An electrical operated solenoid
- 3. Which of the following turbine fuel filters has the greatest filtering action
 - a. Micron
 - b. Small wire mesh
 - c. Stacked charcoal
- 4. What is the purpose of the flow divider in a turbine engine duplex nozzle
 - a. Allows an alternate flow of fuel if the primary flow clogs
 - b. Provides a flow path for bleed air which aids in fuel atomization
 - c. Creates the primary and secondary fuel supplies
- 5. Fuel pressure produced by the engine-driven fuel pump is adjusted by
 - d. Bypass valve adjusting screw
 - e. Engine –driven fuel pump adjusting screw
 - f. Relief valve adjusting screw
- 6. Kerosene is used as turbine engine fuel because
 - a. kerosene does not contain any water
 - b. kerosene has very high volatility which aids in ignition and lubrication
 - c. kerosene has more heat energy per gallon and lubricates fuel system components
- 7. It is necessary to control acceleration and deceleration rates in order to
 - a. prevent over temperature
 - b. prevent rich blow-out and lean die-out
 - c. prevent friction between turbine wheels and the case due to expansion
- 8. Fuel crossfeed systems are used in aircraft to
 - a. purge the fuel tank
 - b. maintain aircraft stability
 - c. jettison fuel in an emergency
- 9. Fuel lines are kept away from sources of heat and sharp bends for
 - a. positive lock
 - b. liquid lock
 - c. vapor lock

- 10. What are the principal advantages of the duplex nozzle in many turbine engine
 - a. Allows a wider range of fuels and filters to be used
 - b. **Provides better atomization and uniform flow pattern**
 - c. Restrict the amount of fuel flow which provide vaporization
- 11. Fuel boost pumps are operated
 - a. during takeoff only
 - b. primarily for fuel transfer to another tank
 - c. to provide a positive flow of fuel to the main fuel pump/engine
- 12. A fuel strainer or filter must be located between
 - a. boost pump and tank outlet
 - b. tank outlet and the fuel metering device
 - c. boost pump and engine driven fuel pump
- 13. The primary purpose of the bleed openings used with duplex fuel nozzles
 - a. provide for automatic mixture control
 - b. lean out the mixture
 - c. aids in proper fuel vaporization
- 14. What is the primary purpose of the fuel heater
 - a. **cool the fuel**
 - b. warm the fuel
 - c. de-aerate the fuel
- 15. The fuel pump relief valve normally directs excess fuel to the
 - a. fuel tank return line
 - b. **inlet side of the pump**
 - c. inlet side of the strainer
- 16. 2 basic types of modern turbine engine fuel area
 - a. avgas and jet fuel
 - b. jet A, jet A-1 (kerosene) and jet B (blended kerosene and gasoline)
 - c. jet A, jet A-1 (blended kerosene and gasoline) and jet B (gasoline)
- 17. The different between jet A and jet A-1 is their points
 - a. **freezing points**
 - b. flashing points
 - c. both A and B
- 18. Microscopic organisms that lives in water that collets in the jet aircraft fuel tank from a scum that holds the water in contact with the metal of which the tank is made and cause.....
 - a. contamination
 - b. corrosion
 - c. ice

- 19. Jet fuel is..... viscous than aviation gasoline
 - a. more
 - b. less
 - c. lease
- 20. If the fuel filter should clog, fuel will flow to engine through the.....
 - a. filter external pump
 - b. filter bypass valve
 - c. pressure relief valve
- 21. In a supervisory EEC system, any fault in the EEC that adversely affects engine operation
 - a. cause redundant or backup units to take over and continue normal operation
 - b. usually degrades performance to the extent that continued operation can cause damage to the engine
 - c. causes the immediate reversion to control by the hydro mechanical fuel control unit
- 22. In order to stabilize cams, springs, and linkages within the fuel control, manufacturers generally recommend that all final turbine engine trim adjustments be made in the
 - a. increase direction
 - b. decrease direction
 - c. decrease direction after over-adjustment
- 23. What should be checked / changed to ensure the validity of a turbine engine performance check if an alternate fuel is to be used?
 - a. **fuel specific gravity setting**
 - b. maximum RPM adjustment
 - c. EPR gauge calibration
- 24. PRIST[™] is a commonly used additive which contains
 - a. **anti-microbial agent**
 - b. anti-icing agent
 - c. both of the above
- 25. Main engine driven fuel pumps used on turbine engines
 - a. gerotor
 - b. vane and roller pump
 - c. gear type pump
- 26. Fuel systems with automatic activation of the fuel heater are usually set for fuel temperatures between
 - a. 35° C and 37° C
 - b. 30° F and 37° F
 - c. 35° F and 37° F

- 27. The purpose using two elements fuel pump is to
 - a. provide back up in case one element should fail
 - b. distribute pump load thereby increasing pump life
 - c. **both above statements are true**
- 28. What are incorporate in the pump elements drive shaft in order to prevent gear element locks up if one element fail
 - a. breaking point
 - b. shear sections
 - c. shaft sections
- 29. A typical turbine engine fuel heater consists of a heat exchanger that utilize
 - d. Engine oil or bleed air to warm the fuel
 - e. Exhaust gas
 - f. Electrical sources
- 30. Which component in the compressor will be actuated by the actuator to prevent compressor stall and limit the air entering the compressor
 - d. Compressor rotor
 - e. Compressor stator
 - f. Spool
- 31. What effect does high atmospheric humidity have on the operation of a jet engine
 - a. decrease engine pressure ratio
 - b. decreases compressor and turbine RPM
 - c. has little or no effect
- 32. What are the positions of the pressurization and dump valve when the engine shut down
 - a. pressurization and dump valves open
 - b. pressurization valve open and dump valve close
 - c. pressurization valve closed and dump valve open
- 33. For what primary purpose is a turbine engine fuel control unit trimmed
 - a. to properly position the power lever
 - b. to adjust the idle RPM
 - c. to obtain maximum thrust output when desired
- 34. What type of fuel control unit is used commonly today's turbine engine
 - a. electromechanical
 - b. mechanical
 - c. hydromechanical or electronic

- 35. Under which of the following conditions will the trimming of a turbine engine be more accurate
 - a. **no wind and low moisture**
 - b. high moisture and low wind
 - c. high wind and high moisture
- 36. Generally, the practice when trimming an engine is to
 - a. turn all accessory bleed air on
 - b. turn on and off accessory bleed air
 - c. turn all accessory bleed air off
- 37. An aircraft should be facing into the wind when trimming an engine. However, if the velocity of the wind blowing into the intake is excessive, it is likely to cause
 - a. false low exhaust gas temperature reading
 - b. trim setting resulting in engine overspeed
 - c. false high compression and turbine discharge pressure, and low trim
- 38. When trimming the engine, the fuel control is adjusted to
 - a. produce as much power as possible
 - b. set idle RPM and maximum speed or EPR
 - c. produce maximum RPM disregard power output
- 39. A full-authority electronic engine control (EEC) is a system that receives all the necessary data for the engine operation and
 - a. adjusts a standard hydromechanical FCU to obtain the most engine operation
 - b. develops the commands to various actuators to control engine parameters
 - c. controls engine operation according to pressure, humidity and ambient temperature
- 40. In a supervisory EEC system, any fault in the EEC that adversely affects engine operation
 - d. Causes redundant or backup units to take over
 - e. Usually degrades performance to the extent engine damage
 - f. Causes an immediate reversion to control by the hydromechanical FCU
- 41. The ACC portion of an EEC system aids turbine engine efficiency by
 - a. adjusting stator vane position according to operating conditions and power requirement
 - b. ensuring turbine blade to engine case clearances are kept to a minimum by controlling case temperature
 - c. none of the above
- 42. What is the purpose of the fuel transfer ejector
 - a. to supply fuel under pressure to the engine-driven pump

b. to assist in the transfer of fuel from the main tank to the boost pump

sump

c. transfer fuel from the boost pump to the wing tank

- 43. The acceptable way to obtain accurate on-site temperature prior to performing engine trimming is to
 - a. call the control tower to obtain field temperature
 - b. observed the Outside Air Temperature
 - c. hang a thermometer in the shade of the nose wheel well
- 44. Where physical separation of the fuel lines from electrical wiring or conduit is impracticable, locate the fuel line
 - a. below the wiring and clamp the line securely to the airframe structure
 - b. above the wiring and clamp the line securely to the airframe structure
 - c. clamp the wiring and line together
- 45. Fuel pressure produced by the engine-driven fuel pump is adjusted by the
 - a. bypass valve adjusting screw
 - b. relief valve adjusting screw
 - c. fuel pump speed
- 46. The density of air is very important when mixing fuel and air to obtain a correct fuel to air ratio. Which of the following weighs the most
 - a. 75 parts of dry air and 25 parts of water vapor
 - b. 100 parts of dry air
 - c. 50 parts of dry air and 50 parts of water vapor
- 47. Which of the following is NOT an input perimeter for the a turbine FCU
 - a. Compressor inlet pressure
 - b. Compressor discharge pressure
 - c. Ambient humidity
- 48. Jet fuel designations, unlike those for AVGAS are merely numbers and do not
 - a. **describe any performance characteristic**
 - b. describe additive to be used
 - c. allow microbial growth
- 49. The typical engine driven fuel pump is designed to deliver a continuous supply of fuel to the FCU in quantities
 - a. lower than required by the engine
 - b. exceed the needs of the engine
 - c. same amount as required by the engine
- 50. In a typical fuel heater, if activated manually the fuel temperature will be regulated by
 - a. amount of fuel flow
 - b. oil shutoff valve
 - c. fuel shutoff valve

INDICATION SYSTEMS

In addition to fuel quantity, a computerized fuel system (CFS) with a togalizer indicator provides indication of how many of the following? The fuel flowmeter used with a continuous fuel injection esten installed on an aircraft horizontally opposed reciprocating engines measures the fuel pressure drop 2. Furl used since reset or initial start up 3 Fuel time remaining at current power setting. acrod the 4. Fuel temperature. A -- manifold valve n - fuel norzies A-Two C - metering valve B - Four. C-Three The principal fault in the pressure type fuel flowmeter indicating system, installed on a horizontally opposed 891 continuous-flow fuel injected aircraft reciprocating The fuel flow indication data sent from motor driven engine, is that a plugged fuel injection nozzle will cause a impeller and turbine, and motorless type fuel flow transmitters is a measure of A - normal operation indication B - higher than normal fuel flow indication. A - fuel volume flow C - lower than normal fael flow indication. 8 - fuel mass flow C - engine burner pressure drop Motor driven impeller and turbine fuel flow transmitters H01 H01 In an aircraft equipped with a pressure drop type fuel flow are designed to transmit data MR indicating system, if one of the injector nozzles becomes restricted, this would cause a decrease in fuel flow with A - by fuel pressure. B - mechanically. E - using aircraft electrical system power. A - an increased fuel flow indication on the gauge B - a deceased fuel flow indication on the gauge. C -- no change in fuel flow indication on the gauge H01 H.S.2.6.1.A.1 The fuel flow indicator rotor and needle for a motor impeller and turbine indicating system is driven by 9150 H02 H.8.2.6.7.A.1 A manifold prequire gauge is designed to A - a mechanical gear train. B - direct coupling to the motor shaft. A - indicate differential pressure between the intake 2- an electrical signal. manifold and atmospheric pressure. B - indicate absolute pressure in the intake manifold. C -- maintain constant pressure in the intake manifold H01 H.8.2.6.2.A.1 On a twin engine aircraft with fuel injected reciprocating engines, one fuel flow indicator reads considerably higher than the other in all engine operating configurations. What H02 H.8.2.6.8.A.1 The purpose of an exhaust gas analyzer is to indicate the is the probable cause of this indication? &- One or more fuel nozzles are clogged. A fuel/air ratio being burned in the cylinders." B - brake specific fuel consumption. B --- Carburetor icing. C - temperature of the exhaust gases in the exhaust C - Alternate air door stuck open. manifold. H01 H.8.2.6.3.A.1 The fuel flow indication system used with many fuelinjected opposed engine airplanes utilizes a measure of A -- fuel flow volume. B-fuel flow mass. C - fuel pressure. 25

Which of the following is primary engine instrument? R\$269.A.I 1302 Which of the following types of electric motors are commonly used in electric tachoromers? A -- Fuel flowmeter R-Tarbometer. A-Synchronous moures. C - Airspeed indicator B - Direct correst, thust wound motors. C - Direct current, series wound motors 1102 A complete break in the line between the manifold pressure gauge and the induction system will be indicated by the gauge registering 1102 H.S.2.7.0.A.1 Where are the bot and cold innetions located in an engine by the gauge registering cylinder temperature indicating system? B --- lower than normal for conditions prevailing. A - Both jonctions are located at the instrument. B - Both junctions are located at the extinder. e prevailing atmospheric pressure C - The bot junction is located at the cylinder and the cold junction is located at the instrument. FI02 Engine oil temperature gauges indicate the temperature of 1102 H.8.2.7.1.A.I the oil Basically, the indicator of a tachemeter system is 1 responsive to change in A ______ the engine B ______ in the oil storage tank A-voltage-athermode C - emeting the eil cooler. B _____ frequency. H02 H.8.2.7.8.A.1 Why do helicopters require a minimum of two synchronous tachoaneter systems? 110.2 H.S.2.7.2.A.1 Which statement is correct concerning a mermocouple A-One indicates engine RPM and the other main rotor type temperature indicating instrument system? RPM. One indicates engine RPM and the other tail rotor A - It usually contains a balancing circuit in the instrument case to prevent fluctuations of the system B --voltage from affecting the temperature reading. C - One indicates main rotor RPM and the other tail rotor RPM B -- Is is a balanced type, variable resistor circuit. RPM. C- It requires no external power source H.S.2.7.9.A.1 H02 If the thermocouple leads were inadvertently crossed at 1102 installation, what would the cylinder temperature gauge H.S.2.7.3.A.I Which statement is true regarding a thermocouple type cylinder head temperature measuring system? pointer indicate? A - Moves off scale on the zero side of the meter. The voltage output of a thermocouple system is determined by the temperature difference between B - Moves off scale on the high side of the meter. N-C -- Normal temperature for prevailing condition. the two ends of the thermocouple. B ---- When the master switch is turned on, a thermocouple indicator will move off scale to the low side. C - The resistance required for cylinder head temperatore 1102 H.S.2.8.0.A.1 A common type of electrically operated oil temperature indicators is measured in farada. gauge utilizes 1902 What basic meter is used to indicate cylinder head B - either a wheatstone bridge or rationseter circuit. temperature in most aircenft? C - a thermocouple type circuit. cylalidat bared lide Galvanometer. B-Electrodynamometer C - Thermocouple type meter 26

(1) Generally, when a turbine engine indicates high EGT 1102 for a particular EPR (when there is no significant damage), 1102 The indication on a thermocouple type cylinder head it means that the engine is out of trim. (2) Some turbine powered aircraft use RPM as the primary temperature indicator is produced by indicator of thrust produced, others use EPR as the primary A a current generated by the temperature difference between dissimilar metal hot and cold junctions indicator. B - resistance changes in two dissimilar metals. C-a difference in the voltage between two dissimilar Regarding the above statements, K- both No. 1 and No. 2 are true metals 8 - only No. 1 is true. outlet C - only No. 2 is true TUYBIR. 102 (1) Powerplant instrument range markings show whether Freshut the current state of powerplant operation is normal, acceptable for a limited time, or unauthorized. INR ! H02 H.8.2.8.7.A.1 EMITR (2) Powerplant instrument range markings are based on Engine pressure ratio is determined by MEER Totel installed engine operating limits which may not exceed K dividing turbine outlet total pressure by engine inlet (but are not necessarily equal to) those limits shown on the engine Type Certificate Data Sheet. B - multiplying engine inlet total pressure by turbine total pressure. Regarding the above statements, outlet total pressure C - dividing engine inlet total pressure by turbine outlet A - neither No. 1 nor No. 2 is true total pressure B-both No. 1 and No. 2 are true. C-only No. 1 is true. H.8.2.8.8.A.1 H02 let engine thermocouples are usually constructed of H02 H.8.2.8.3.A.1 A -- aluroel constantan Thermocouple leads B - chromel alumel A -- may be installed with either lead to either post of the C -+ iron constantan B - are designed for a specific installation and may not be indicator H02 H.8.2.8.9.A.1 altered. Which of the following instrument discrepancies require C -- may be repaired using solderless connectors replacement of the instrument? H02 1. Red line missing from glass H.8.2.8.4.A.1 (1) Engine pressure ratio (EPR) is a ratio of the exhaust 2 Glass cracked. gas pressure to the engine inlet air pressure, and indicates 3. Case paint chipped the thrust produced Will not zero out (2) Engine pressure ratio (EPR) is a ratio of the exhaust 5 Pointer loose on shaft. gas pressure to the engine inlet air pressure, and indicates 6. Mounting screw loose winnetric efficiency 7. Leaking at line B nut. 8 Fogged. Regarding the above statements, A-1,2,4,7 A - both No. 1 and No. 2 are true. B-2, 3, 7, 8 B only No 1 is true. e=2,4,5,8 C-only No. 2 is true 2 5129 H.8.2.8.5.A.1 H02 What unit in a tachometer system sends information to the indicator? A - The two phase ac generator. B - The synchronous motor. S- The three phase ac generator, 27



H.S.3.0.0.A.1 H02 The engine pressure ratio (EPR) indicator is a direct indication of

A - pressure ratio between the front and aft and of the

B — engine thrust being produced.
 C — ratio of engine RPM to compressor pressure.

H.S.3.0.1.A.1 H02 The exhaust gas temperature (EGT) indicator on a gas turbine engine provides a relative indication of the

A -- temperature of the exhaust gases as they pass the * exhaust come

8- turbine inlet temperature. (TIT)

H.S.3.0.2.A.1 H02 What instrument indicates the throat of a gas turbine engine?

A --- Turbine inlet temperature indicator.

R Engine pressure ratio indicator.

C-Exhaust gas temperature indicator.

H.8.3.0.3.A.1 H02 In a turbine engine, where is the turbine discharge pressure indicator sensor located?

 A — At a location in the extraust cone that is determined to be subjected to the highest pressures.
 B — At the aft end of the compressor section.

- Immediately aft of the last turbine stage.

H.8.3.0.4.A.1 H02 In what units are turbine engine tachometers calibrated?

A — Actual engine RPM B — Percent of engine pressure ratio. Percent of engine RPM

H.8.3.0.5.A.1 H02 Instruments that provide readings of low or negative presture, such as manifold pressure gauges, are usually what type?

A - Vane with calibrated spring. B - Bourdon tube Disphragm or beliows.

Yow 1=ve yreak

ILS.3.0.6.A.1 H02

Jastruments that measure relatively high fluid pressures, such as oil pressures gauges, are usually what type?

B — Vace with calibrated spring
 C — Diaphragm or bellows.

II.8.3.0.7.A.1 H02 The RPM indication of a synchronous as motor inchometer is governed by the generator

A - current B - voltage C frequency.

H.S.J.0.8.A.1 H02 The EGT gauge used with reciprocating engines is primarily used to furnish temperature readings in order to

A --- prevent engine overtemperature

B — obtain the best mixture setting for engine cooling. C obtain the best mixture setting for fuel efficiency.

H.8.3.0.9.A.1 H02 A red ficiangle dot, or diamond mark on an engine instrument face or glass indicates

- the maximum limit for high transients such as starting.
- B the maximum operating limit for all normal operations.

C — a restricted operating range.

1.8.3.1.0.A.1 101 Which of the following fire detectors are commonly used in the power section of an engine nacelle?

A - Smoke detectors.

B - Rate of temperature rise detectors.

C - CO detectors.

L8.3.1.1.A.1 🗭 101

What is the function of a fire detection system?

- A To activate a warning device in the event of a powerplant fire.
- B To discharge the powerplant fire extinguishing system at the origin of the fire.

C - To identify the location of a powerplant fire

29

STARTING AND IGNITION SYSTEM

| | - |
|--|------|
| IGNITION | |
| STARTING AND TOTAL System | is |
| TURBINE ENGINE | |
| the das turbine-cart | |
| main advantage of the s | |
| 1. The har | |
| newer is needed assible stidge | |
| auxiliary protection of the starts are do using one cartridge tom. | |
| B) self-curral starts can be made suba system | |
| e) several system is the | |
| the simplest gas turbine starting t | |
| 2. | |
| A) electric motor | |
| B) pneumatic | n îs |
| impingement starting system | |
| headvantage of the gas turbine product | |
| 3. The main disadvandog | |
| that | |
| the bas a high torque to weight ratio | |
| A) It has a time is short | |
| b) bioh-volume airflow is required | 0.3 |
| inght total | eu |
| Most small gas turbine engines installed in ous | |
| 4. Host shire of starting system. | |
| | |
| All starter-generator | |
| a) oneumatic | |
| b) prednate | |
| C) callinge | |
| ignition systems require | e an |
| 5. Which of the following capacitor and a shunted gap ignitor? | |
| internal vibrating device in the excitor and a sharted gap is | |
| | |
| A) DC input, high-voltage output | |
| B) AC output, low-voltage input | |
| CD_DC input, low-voltage output | |
| | |
| | |

6. Most gas turbine engine ignition systems work on the principle of

electromagnetic induction creating a double high-voltage spark

filtering high-voltage current to create high power

slow-condenser charge and rapid condenser discharge

- 7. A gas turbine ignition system has spark duration of 40 microseconds and a power output of 200 kw. What is the energy level in joules?
 - A) 0.8 joules
 - в) Д

A)

B)

5 joules 8 joules



- 15. Which type of starter uses an explosive charge as a power source?
 - A) A gas turbine starter
 - B A
- A cartridge/air turbine starter
 - A starter/generator

| 16. Which type of starter uses the same fuel as the engine it is trying to start? |
|---|
| A) An air turbine starter Gas turbine starter Combustion starter |
| 17. In the start sequence, the starter is usually de-energized |
| A) after the engine has reached a self sustaining speed ~ as soon as the fuel is ignited |
| C) when the pilot releases the start buttom 18. When engine RPM stabilizes at or near starter cut-off speed and will not accelerate even when more fuel is added, this is called |
| A) a hot start B) an aborted start a hung start |
| 10 Why do turbing engine ignition systems require high energy? |
| A) To ignite the fuel under conditions of high altitude and high A) to more the fuel under conditions of high altitude and high |
| B) Because the applied voltage is much greater × B) To ignite the fuel under conditions of high altitude and low temperatures |
| 20. When using an electric starter motor, the current flow through it |
| A) is highest just before starter cutoff B) remains relatively constant throughout the starting cycle C) is highest at the start of motor rotation |
| 21. A clicking sound heard at engine coast-down in a pneumatic starter incorporating a sprag clutch ratchet assembly is an indication of |
| A) gear tooth and / or pawl damage |
| B) one or more broken pawl springs |
| the pawls re-contacting and riding on the ratchet gear |

22. A safety feature usually employed in pneumatic starters that is used to prevent the starter from reaching burst speed if inlet air does not terminate on schedule is the



drive shaft shear point

- stator nozzle design that chokes airflow and stabilizes turbing wheel speed
- C) spring coupling release

- The primary advantage of pneumatic (air turbine) starters over
- comparable electric starters fro turbine engines is 23.
 - a decreased fire hazard
 - reduction gearing not required A) B)
 - high power-to-weight ratio

Air turbine starters are generally designed so that reduction gear distress or damage may be detected by

- characteristic sounds from the starter assembly during engine A)
- breakage of a shear section on the starter drive shaft B)

inspection of a magnetic chip detector

In the event a pneumatic start valve will not operate and the manual override must be used, the starter T-handle must be closed at 25. scheduled starter drop out because



07

24.

the starter will overheat

- the starter will overspeed at a given N2
- the start valve will discharge hot air and harm the operator
- Generally, when removing a turbine engine igniter plug, in order to 26. eliminate the possibility of the technician receiving a lethal shock, the ignition switch is turned off and



disconnect from the power supply circuit

- the igniter lead is disconnected from the plug and the center electrode grounded to the engine after disconnection the transformer-exciter input lead and waiting the prescribed time
- the transformer-exciter input lead is disconnected and the C) center electrode grounded to the engine after disconnecting the igniter lead from the plug and waiting the prescribed time
- The capacitor-type ignition system is used almost universally on 27. turbine engines primarily because of its high voltage and
 - low amperage A)
 - B) long life



- The purpose of an under current relay in a starter-generator system is 28. to
 - provide a backup for the starter motor relay A)

disconnect power from the starter-generator and ignition when sufficient engine speed is reached

C) keep current flow to the starter-generator under the maximum circuit capacity ×

Pneumatic starters are usually designed with what types of airflow 29. impingement systems?



Radial inward flow turbine and axial-flow turbine

- Centrifugal compressor and axial-flow compressor Double entry centrifugal outward flow and axial-flow turbines
- Sharp bends should be avoided in ignition leads primarily because 30.
 - y develop in the insulation through which high

| 0 | weak | points | may | deve |
|---|---------|--------|-------|--------|
| | tennete | | nt ca | n leal |

- ignition lead wire conductor material is brittle and may break ignition lead shielding effectiveness will be reduced B)
- C)
- Inspection of pneumatic starters by maintenance technicians usually
- 31. includes checking the



- oil level and magnetic drain plug condition stator and turbine rotor blades for FOD and erosion

- rotor alignment C)
- Igniter plugs used in turbine engines are subjected to high intensity spark discharges and yet they have a long service life because they 32.
 - operate at much lower temperatures
 - are not placed directly into the combustion chamber A)
 - B) do not require continuous operation
 - 0

33.

A safety feature usually employed in pneumatic starters that is used if the clutch does not release from the engine drive at the proper time

- during start is the
- flyweight cutout switch A)
- spring coupling release B)
- drive shaft shear point
- In a typical starter-generator system, under which of the following 34. starting circumstances may it be necessary to use the start stop button?

Hung start AD

B)

- Hot start
- Contacts stick open C)
- Great caution should be exercised in handling damaged hermetically 35. sealed turbine engine igniter transformer units because
 - compounds in the unit may become a fire or explosion hazard A) when exposed to the air

some contain radioactive material

some contain toxic chemicals



On a triple spool axial flow compressor gas turbine engine, the starter 36. will rotate only the



high pressure compressor

N2 spool compressor B)

both high and low pressure compressor C)

A troubleshooting test of the igniter plug is to listen for the 37. made when the plug fires.

explosion sound A)

rattling noise B)

snapping noise Ch

38. What type of system used double capacitor and storage capacitor?



Low tension system High tension system

Both low and high tension system

Essay Questions

1. For the gas turbine starting system, draw a start sequence chart (i.e RF vs Time and EGT vs Time curves) to illustrate how a typical start sequer operates - commencing from starter ON, ignition ON, and Fuel ON until i condition (6 marks)

2. Use the chart to explain the relationship between the compressor sp and exhaust gas temperature with time during the start seque 6 marks)

100 QUESTIONS (ONLY HAVE QUESTIONS START FROM 33 -100)

- 33. What factor is not used in the operation of an aircraft gas turbine engine fuel control unit?
 - A) Compressors inlet air temperature.
 - Mixture control position.
 - C) Power lever position.
- 34. Under which of the following conditions will trimming of a turbine engine the most?
 - A) High wind and high moisture.
 - B) High moisture and low wind.
 - No wind and low moisture.
- 35. In turbine engine that utilize a pressurization and dump valve, the dump portion of the valve
 - A) Cuts off fuel flow to the engine fuel manifold and dumps the manifold fuel into the combustor to burn just before the engine shuts down.
 - Drains the engine manifold lines to prevent fuel boiling and subsequent deposits in the lines as a result of residual engine heat (at engine shutdown).
 - C) Dumps extra fuel into the engine in order to provide for quick engine acceleration during rapid throttle advancement.
- 36. What are the positions of the pressurization valve and the dump valve in a jet engine fuel system when the engine is shutdown?
 - Pressurization valve closed, dump valve open.
 Pressurization valve open, dump valve open.
 Pressurization valve closed, dump valve open.
 - C) Pressurization valve closed, dump valve closed.
- 37. The active clearance control (ACC) portion of an EEC system aids turbine engine system by
 - A) Adjusting stator vane position according to operating conditions and power requirement.
 - B) Ensuring turbine blade to engine case clearances are kept to a minimum by controlling cases temperatures.
 - Automatically adjusting engine speed to maintain a desired EPR.
- 38. A supervisory electronic engine operating control (EEC) is a system that receives engine operating information and
 - Adjust a standard hydromechanical fuel control unit to obtain the most effective engine operation.
 - B) Develops the command s to various actuators to control engine parameters.
 - C) Control engine operation according to ambient temperature, pressure and humidity.

39. In a supervisory EEC system, any fault in the EEC that adversely affects engine operation

- A) Causes redundant or backup units to take over and continue normal operation.
- B) Usually degrades performance to the extent that continued operation can cause damage to the engine.
- Causes an immediate reversion to control by the hydromechanical fuel control unit.
- 40. What should be checked/changed to ensure the validity of a turbine engine performance check if an alternate fuel is to be used?
 - Such a specific gravity setting.
 - B) Maximum RPM adjustment.
 - C) EPR gauge calibration.
- In order to stabilize cams, springs and linkages within the fuel control, manufacturers generally recommend that all final turbine engine trim adjustments be made in the
 - Increase direction.
 - B) Decrease direction.
 - C) Decrease direction after over-adjustment.

42. Generally, the practice when trimming an engine is to

- Turn all accessory bleed air off.
- B) Turn all accessory bleed air on.
- C) Make adjustment (as necessary) for all engines on the same aircraft with accessory bleed settings the same – either on or off.
- 43. What is the purpose of additive Prist?
 - A) To prevent icing in the fuel system.
 - B To prevent the growth of microbes in the fuel system.
 - C) To make the fuel flow better at high temperature
- 44. What period does the fuel pump bypass valve open and remain open?
 - Description when the fuel pump pressure is greater than the demand of the engine.
 - B) When the boost pump pressure is greater than the fuel pump pressure.
 - C) When the fuel pump output is greater than the demand of the carburetor.

45. The low pressure fuel filter will trap particles then the high pressure filter.

(A) bigger

- B) smaller
- C) lighter
- 46. The primary condition(s) that allow(s) microorganisms to grow in the fuel in aircraft fuel tank is (are)
 - A) Warm temperatures and frequent fueling.
 - B The presence of water
 - C) The presence of dirt or other particulate contamination.
- 47. The fuel pump relief valve directs excess fuel to the
 - A) Fuel tank return line.

 - Inlet side of the fuel pump.
 Inlet side of the fuel strainer.
- 48. Which of the following statements concerning a centrifugal-type fuel boost pump located in a fuel supply tank in NOT true?
 - A) Air and fuel vapors do not pass through a centrifugal-type.
 - B) Fuel can be drawn through the impeller section of the pump when it is not in operation.
 -) The centrifugal-type pump is classified as a positive displacement pump.
- 49. Where physical separation of the fuel lines from electrical wiring or conduit or impracticable, locate the fuel line

Below the wiring and clamp the line securely to airframe structure.

- B) Above the wiring and clamp the line securely to the airframe structure.
- C) Inboard of the wiring and clamp both securely to the airframe structure.

50. A fuel strainer or filter must be located between the

| A) | Boost | pump | and | tank | outlet. | |
|----|-------|------|-----|------|---------|--|
|----|-------|------|-----|------|---------|--|

Tank outlet and the fuel metering device.
 Boost pump and the engine-driven fuel pump.

51. Fuel pressure produced by the engine-driven fuel pump is adjusted by the

- A) Bypass valve adjusting screw.
- B Relief valve adjusting screw.
- C) Engine-driven fuel pump adjusting screw.

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52. Where should the main fuel strainer be located in the aircraft fuel system?

- A) Downstream from the wobble pump check valve.
- B) At the lowest point in the fuel system.
- C) At any point in the system lowers than the carburetor strainer.

53. Kerosene is used as turbine engine fuel because

A) Kerosene has very high volatility which aids in ignition and lubrication.

- B Kerosene has more heat energy per gallon and lubricates fuel system
 - components.
- C) Kerosene does not contain any water.

54. A duplex fuel nozzle supplies a wide pattern fuel through

- The inner fuel outlet.B) The outer fuel outlet.
- C) The outer fuel inlet
- 55. Fuel crossfeed system are used in aircraft to
 - A) Purge the fuel tanks.
 - B) Jettison fuel in an emergency.
 - Maintain aircraft stability.
- 56. When a turbine engine is supplied with too much fuel at a low air flow, the likely result will be
 - A) Lean Die-out.
 - B) Rich mixture.
 - O Rich Blow-out.
- 57. A hydromechanical fuel control unit normally has what types of inputs?
 - A) Pressure, Electrical, RPM
 - B) Digital, Electrical, Temperature RPM, Pressure, Temperature
- 58. Most fuel control units can be divided into two units, the section which senses the engine parameters and the section which provides the proper fuel flow for the given conditions.
 - A) metering, computing
 - computing, metering
 - C) RPM, pressure

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- In a supervisory EEC system, any fault in the EEC that adversely affects engine operation
 - A) Causes redundant or backup units to take over and continue normal operation.
 - B) Usually degrades performance to the extent that continued operation can cause damage to the engine.
 - C) Causes an immediate reversion to the control by the hydromechanical fuel control unit.
- 60. A supervisory Electronic Engine Control (EEC) is a system that receives engine operating information and
 - A) Adjusts a standard hydromechanical fuel control unit to obtain the most effective engine operation.
 - B) Develops the commands to various actuators to control engine parameters.
 - Controls engine operation according to ambient temperature, pressure and humidity.
- 61. What is the purpose of the flow divider in a turbine engine duplex fuel nozzle?
 - A) Allows and alternate flow of fuel if the primary flow clogs or is restricted.
 - O Creates the primary and secondary fuel supplies.
 - C) Provides a flow path for bleed air which aids in the atomization of fuel.
- 62. The Active Clearance Control (ACC) portion of an EEC system aids turbine engine efficiency by
 - A) Adjusting stator vane position according to operating conditions and power requirements.
 - Ensuring the turbine blade to engine case clearances are kept to a minimum by controlling case temperature.
 - C) Automatically adjusting engine speed to maintain a desired EPR.
- 63. The generally acceptable way to obtain accurate on-site temperature prior to performing engine trimming is to
 - A) Call the control tower to obtain field temperature.
 - B) Observed the reading on the aircraft Outside Air Temperature (OAT) gauge.
 - Hang a thermometer in the shade of the nose wheel-well until the temperature reading stabilizes.
- 64. Which type of fuel control is used on most of today's turbine engine?
 - A) Electromechanical.
 - B) Mechanical.
 - Hydromechanical or electronic.

The density of air is very important when mixing fuel and air to obtain a correct fuel-65. to-air ratio. Which of the following weighs the most important? A 75 parts of dry air and 25 parts of water vapor. B) 100 parts of dry air. C) 50 parts of dry air and 50 parts of water vapor. A mixture ratio of 11:1 normally refer to 66. A) A stoichiometric mixture. B) 1 part air to 11 parts fuel. 1 part fuel to 11 parts air. In a turbine engine that utilizes a pressurization and dump valve, the dump portion 67. of the valve A) Cuts off fuel flow to the engine fuel manifold and dumps the manifold fuel into the combustor to burn just before the engine shuts down. Drains the engine manifold lines to prevent fuel boiling and subsequent deposits in the lines as a result of residual engine heat (at engine shutdown) C) Dumps extra fuel into the engine in order to provide for quick engine acceleration during rapid throttle advancement. Which of the following is NOT an input parameter for a turbine engine fuel control 68. unit? A) Compressor inlet pressure B) Compressor inlet temperature. Ambient humidity. The primary purpose of the air bleed openings used with continuous flow fuel injector 69. nozzles is to A) Provide for automatic mixture control. B) Lean out the mixture. Aid in proper fuel vaporization. What effect does high atmospheric humidity have on the operation of a jet engine? 70. A) Decreases engine pressure ratio. B) Decreases compressor and turbine RPM. Has little or no effect. ALD 30203/A/00/09 11
Turbine Engine Starting And Ignition

71. The main disadvantage of the gas turbine pneumatic starting system is that

A) it has a high torque to weight ratioB) starting time is short

C high-volume airflow is required

72. Which of the following capacitor-discharge ignition systems require an internal vibrating device in the excitor and a shunted gap ignitor?

DC input, high-voltage output
 B) AC output, low-voltage input
 C) DC input, low-voltage output

73. Turbine engine ignition systems are

- A) less dangerous than reciprocating ignition systems
- B more dangerous than reciprocating ignition systems
- C) much more complicated than reciprocating ignition systems
- 74. What type of igniter plug requires extra careful handling of the firing end?

Shunted gap Ø Air gap C) Tooth gap

75. Airflow to the pneumatic starter from a ground unit is normally prevented from causing starter over speed during engine start by

 $\bigotimes_{B)}$ stator nozzle design that chokes airflow and stabilizes turbine wheel speed B) activation of a flyweight cutout switch

- C) a preset timed cutoff of the airflow at the source
- 76. The constrained-gap igniter plug used in some gas turbine operates at a cooler temperature because
 - A) it projects into the combustion chamber
 - B) the applied voltage is less
 - \bigoplus the construction is such that the spark occurs beyond the face of the combustion chamber line

77. A safety feature usually employed in pneumatic starters that is used to prevent the starter from reaching burst speed if inlet air does not terminate on schedule is the

A) drive shaft shear point

- stator nozzle design that chokes airflow and stabilizes turbine wheel speed spring coupling release C)
- Generally, when removing a turbine engine igniter plug, in order to eliminate the 78. possibility of the technician receiving a lethal shock, the ignition switch is turned off and
 - A) disconnect from the power supply circuit
 - the igniter lead is disconnected from the plug and the center electrode grounded to the engine after disconnection the transformer-
 - C) the transformer-exciter input lead is disconnected and the center electrode grounded to the engine after disconnecting the igniter lead from the plug and waiting the prescribed time
- Which of the following capacitor-discharge ignition systems require an internal 79. vibrating device in the excitor and a shunted gap ignitor?
 - DC input, high-voltage output
 - B) AC output, low-voltage input
 - C) DC input, low-voltage output
- 80. Turbine engine ignition systems are

less dangerous than reciprocating ignition systems more dangerous than reciprocating ignition systems much more complicated than reciprocating ignition systems

Airflow to the pneumatic starter from a ground unit is normally prevented from 81. causing starter over speed during engine start by

A) stator nozzle design that chokes airflow and stabilizes turbine wheel speed

- 6) activation of a flyweight cutout switch
- C) a preset timed cutoff of the airflow at the source
- The constrained-gap igniter plug used in some gas turbine operates at a cooler 82. temperature because
 - A) it projects into the combustion chamber
 - B) the applied voltage is less
 - O the construction is such that the spark occurs beyond the face of the combustion chamber line

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83. Which of the following are included in a typical turbine engine ignition system?

- 1) Two igniter plugs
- 2) Two transformers
- 3) One exciter unit
- Two intermediate ignition leads 4)
- 5) Two low-tension igniter leads

Two high-tension igniter leads

84. In a turbine engine dc capacitor discharge ignition system, where are the highvoltage pulses formed?



- 85. In a typical starter-generator system, under which of the following starting circumstances may it be necessary to use the start stop button?
 - A) Hung start
 - B) Hot start
 - C Contacts stick open
- 86. A safety feature usually employed in pneumatic starters that is used to prevent the starter from reaching burst speed if inlet air does not terminate on schedule is the

 - drive shaft shear point
 stator pozzlo de i stator nozzle design that chokes airflow and stabilizes turbine wheel speed C) spring coupling release
- 87. Most gas turbine engine ignition systems work on the principle of
 - A) electromagnetic induction creating a double high-voltage spark
 - B) filtering high-voltage current to create high power
 - C slow-condenser charge and rapid condenser discharge
- 88. The words "dual duty system" in relation to modern gas turbine ignition systems mean that

14

A) one ignitor uses high voltage, and the other uses low voltage

B) two discharger tubes are incorporated into the system

ne is used for starting, and one may be run continuously

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89. After the ignition system is shut off, the ignition system will be drain thru the:

| | bleed resistor |
|----|---------------------|
| B) | igniters |
| C) | discharge resistors |

90. Which type of starter uses an explosive charge as a power source?

- A) A gas turbine starter A cartridge/air turbine starter
- C) A starter/generator
- Airflow to the pneumatic starter from a ground unit is normally prevented from 91. causing starter over speed during engine start by

(A) stator nozzle design that chokes airflow and stabilizes turbine wheel speed B) activation of a flyweight cutout switch

- C) a preset timed cutoff of the airflow at the source
- 92. The constrained-gap igniter plug used in some gas turbine operates at a cooler temperature because
 - A) it projects into the combustion chamber
 - B) the applied voltage is less
 - the construction is such that the spark occurs beyond the face of the combustion chamber line
- The primary advantage of pneumatic (air turbine) starters over comparable electric 93. starters fro turbine engines is
 - A) a decreased fire hazard
 - B) reduction gearing not required
 - C high power-to-weight ratio

The main disadvantage of the gas turbine pneumatic starting system is that 94.

A) it has a high torque to weight ratio

B) starting time is short

high-volume airflow is required

95. Which of the following capacitor-discharge ignition systems require an internal vibrating device in the excitor and a shunted gap ignitor?



- C) DC input, low-voltage output
- 96. If a gas turbine engine, equipped with a modern ignition system, has an aircraft battery that is somewhat low, the effect on ignition will be
 - A) a non-functional system
 - B) lengthening of the duty cycle
 - Sparks of the same intensity as normal, but occurring at a slower rate
- 97. After the ignition system is shut off, the _____ bleeds off any remaining charge in the igniter box.
 - A safety resistors B) igniters C) discharge resistors
- 98. Which type of starter uses an explosive charge as a power source?
 - Air B) Electricity
 - C) Hydraulic Pressure
- 99. Which statement is correct regarding the ignition system of a turbine engine?
 - A) The system is normally de-energized as soon as the engine starts
 - It is energized during the starting and warm up periods only The system generally includes a polar inductor-type magneto
- 100. The constrained-gap igniter plug used in some gas turbine operates at a cooler temperature because
 - A) it projects into the combustion chamber
 - B) the applied voltage is less
 - O the construction is such that the spark occurs beyond the face of the combustion chamber line



Malaysian Institute of Aviation Technology ANSWER SHEET

Subject Name

TURBINE ENGINE II

Class

Semester

LEUSION NAMEER ALD ZO203/A/00/09

| CONTRACTOR OF CONTRACTOR | | | | | - | | | | - | | | | | | |
|--------------------------|----|--------------------|---|-----|-----|--------------|---|----|-------------|----|---|-----|----------------|-----|----------------|
| | | АВС | | "Ma | A | вс | | | ABC | | A | вс | | | АВС |
| | 1 | | | 2 | | | | 41 | B C | 61 | A | | | 81 | |
| | 2 | | | 2 | 2 A | | | 42 | B C | 6: | | | | 82 | (A) (B) |
| | 3 | B C | | 2 | 3 🗭 | BC | | 43 | | 63 | A | B | | 83 | (A) (B) (C) |
| | 4 | (A) (B) (B) | | 2 | 4 A | \mathbf{O} | | 44 | ●®© | 64 | A | B | | 84 | |
| | 5 | AB | | 2 | 5 A | | | 45 | BC | 65 | | BC | | 85 | |
| | | | | | | | | | | | | | | | |
| | | ABC | | | A | BC | | | ABC | | A | вс | | | ABC |
| | 6 | | | 2 | 5 | BC | * | 46 | | 66 | A | B | а () | 86 | BC |
| | 7 | BC | | 2 | A | BO | | 47 | | 67 | A | C | ਂ ਕਾ ਨੂਵੀਂ ਸ਼ੁ | 87 | (A) (B) (C) |
| | 8 | B C | | 2 | 8 A | C | | 48 | AB | 68 | A | B | 3 | 88 | ABC |
| | 9 | | | 2 | | BC | | 49 | B C | 69 | A | B | | 89 | BC |
| | 10 | AB | | 3 | | C | | 50 | | 70 | A | B | | 90 | ACC |
| | | | | | | | | | | | | | | | |
| | | ABC | | | A | ВС | | | ABC | | A | ВС | | | ABC |
| | 11 | BC | | 3 | A | B | | 51 | | 71 | A | BO | 10 | 91 | ØBC |
| | 12 | (A) (B) (D) | | 3: | 2 A | | | 52 | | 72 | | BC | va va | 92 | |
| | 13 | | | 3: | | | | 53 | | 73 | A | 0. | | 93 | |
| | 14 | BC | * | 34 | | B | | 54 | BC | 74 | | BC | | 94 | ABC |
| | 15 | AB | | 3 | A | | | 55 | ABØ | 75 | | BC | 9 | 95 | BC |
| | | | | | | | | | | | | | | | |
| | | ABC | | | A | BC | | | ABC | | А | BC | | | ABC |
| | 16 | | | 30 | | BC | | 56 | (A) (B) (B) | 76 | A | B | 9 | 96 | AB |
| | 17 | | | 3 | A | B | | 57 | (A) (B) (B) | 77 | A | C | | 97 | BC |
| | 18 | (A) (B) (B) | | 38 | | BC | | 58 | | 78 | A | C | | 98 | BC |
| | 19 | B C | | 39 | | B | | 59 | (A) (B) (B) | 79 | | BC | | 99 | |
| | 20 | | | 40 | | BC | | 60 | AB | 80 | A | 000 | | 100 | |

ALL SUB-TOPICS

| / | |
|----|---|
| τι | Irbine Engine Lubrication |
| 1. | Lubrication out |
| | A) In which |
| | B) In which the viscosity does not vary much with temperature change C) Which have high SAE numbers |
| 2. | If all other requirements are met, theoretically, what type of oil should be used to achieve a perfect engine lubrication? |
| | An oil that combines high viscosity and low demulsibility C) An oil that combines a low viscosity and low demulsibility |
| | a high neutralization number |
| 3. | In addition to lubricating (reducing friction between moving parts), engine oil performs what functions? |
| | A) Cools, seals, cleans, prevents corrosion Cools, seals, cleans, prevents corrosion, cushions impact (shock) loads Cools, cleans, prevents corrosion |
| 4. | Manufacturers normally require turbine engine oil servicing within a short time after engine shutdown primarily to: |
| | A) provide better indication of any oil leaks in the system |
| | engines oil system |
| 5. | The purpose of the last chance filters is to: |
| | A) assure clean supply of oil to the system B filter the oil immediately before it enters the main bearing C) prevent damage to the oil spray nozzle |
| 6. | The viscosity of a liquid is a measure of its |
| | A Resistance to flow By Rate if change of internal friction with change in temperature C) Weight or density |
| 7. | Which of the following has the greatest effect on the viscosity of lubricating oil? |

A) temperature B) pressure C) volatility 8. The oil which dampened the main bearing is being utilized in some turbine engines to N provide lubrication of bearings from the beginning of starting rotation until normal oil pressure is established B) provide an oil film between the outer race and the bearing housing in order to reduce vibration tendencies in the rotor system, and to allow for slight misalignment C) dampen surges in oil pressure to the bearings 9. What will result if an oil filter becomes completely blocked? A) Oil will flow at a reduced rate through the system B Oil flow to the engine will stop C) Oil will flow at the normal rate through the system What component in an aircraft engine lubrication system that permits the oil to flow 10. to the system should the filter blocked? A) Oil pump (B) Oil filter by pass valve C) Oil pressure relief valve The pumping capacity of the scavenge pump in a dry sump aircraft engine lubrication 11. n greater than capacity of the oil pressure pump b) less than the capacity of the oil supply pump C) usually equal to the capacity of the oil supply in order to maintain constant cooling condition The purpose of dwell chamber in a turbine engine oil tank is to provide: 12. A) collection point sediment separation of entrained air form scavenges oil pressurized oil supply to the oil pump inlet When should the oil servicing be accomplished? 13.



20. Type of cooling that direct the air through the hollow blades and out through the tileading edge and trailing edge called:



Turbine Engine Fuel Metering System

- 21. A supervisory electronic engine control (EEC) is a system that receives engine operating information and
 - A) Adjusts a standard control hydromechanical fluid control unit to obtain the mos effective engine operation.
 - B Develops the command to various actuators to control engine parameter.
 - C) Controls engine operation according to ambient temperature, pressure and humidity.
 - 22. Fuel boost pumps are operated
 - (A) To provide a positive flow of fuel to the engine
 - B) During take-off only
 - C) Primarily for fuel transfer to another tank
 - 23. In turbine engine that utilize a pressurization and dump valve, the dump portion of the valve
 - A) Cuts off fuel flow to the engine fuel manifold and dumps the manifold fuel into the combustor to burn just before the engine shuts down.
 - Drains the engine manifold lines to prevent fuel boiling and subsequent deposition in the lines as a result of residual engine heat (at engine shutdown).
 - C) Dumps extra fuel into the engine in order to provide for quick engine acceleration during rapid throttle advancement.
 - 24. What are the positions of the pressurization valve and the dump valve in a jet engine fuel system when the engine is shutdown?
 - A) Pressurization valve closed, dump valve open.
 - B) Pressurization valve open, dump valve open.
 - C) Pressurization valve closed, dump valve closed.
 - 25. In flight turbine engine flameouts are usually caused by





A) Electromechanical.

B) Mechanical.

-01 1/2

Hydro mechanical or electronic.

39. It is necessary to control acceleration and deceleration rates in turbine engines in order to:



A) Prevent blowout or die-out B) Prevent over temperature

C) Prevent friction between turbine wheels and the case due to expansion and Contraction

(1) A supervisory electronic engine control (EEC) is a system that receives 40. information regarding various engine operating parameters and adjusts a standard hydro mechanical fuel control unit to obtain the most effective engine operation

(2) A full authority EEC is a system that receives all the necessary data for engine operations and develops the commands to various actuators to control engine parameters

A) Both 1&2 are wrong. BOth 1&2 are right C) Only 1 is right.

Turbine Engine Starting and Ignition

The main disadvantage of the gas turbine pneumatic starting system is that 41.



When using an electric starter motor, current usage 42.

A Is highest at the start of motor rotation





SET B (75 QUESTIONS) (DO NOT HAVE QUESTIONS START FROM 35 – 54)

CONFIDENTIAL

GAS TURBINE ENGINE II - TEST SET "B"

SECTION A - MCQ

- 1. Which this characteristic is desirable in turbine engine oil:
 - A) low flash point
 - B) high flash point L1
 - C) high volatility
- 2. What type of oil system is usually found on the turbine engine?
 - A) dry sump, pressure and spray
 - B) dry sump. dip and splash
 - C) wet sump, spray and splash
- 3. As a general rule, a small amount of fuzzy particles or grey metallic paste on a turbine engine magntic chip detector :
 - A) is considered to be the result of normal wear L1
 - B) indicates an imminent component failure
 - C) indicates accelerated generalized wear
- 4. If all other requirement can be met. What type of oil should be use to achieve theoretically perfect engine lubrication:
 - A) the thinnest oil that will stay in place and maintain reasonable film strength L2
 - B) an oil that combines high viscosity and low demulsibility
 - C) an oil that combines a low viscosity index and a high neutralization number
- 5. What is the purpose of the last chance oil filter?
 - A) to prevent damage of the oil spray nozzles
 - B) to filter the oil immediately before its enter the main bearing L2
 - C) to ensure a clean supply of oil to the lubrication system
- 6 Manufacturer normally requires turbine engine oil servicing within a short time after engine shutdown primarily to:
 - A) prevent over servicing L2
 - B) help dilute and neutralize any contaminants that may already be present in the engine oil system
 - C) provide a better indication of oil leaks in the system

CONFIDENTIAL

- 7. What is the primary purpose of the oil breather pressurization system that is used on turbine engine?
 - A) prevent foaming of the oil
 - B) allow aeration of the oil for better lubrication because of the oil/air mist
 - C) provides a proper oil spray pattern from the main bearing oil jets

L2

- 8. In the jet engine which uses fuel-oil heat exchanger. The oil temperature is controlled by a thermostatic valve that regulates the flow of:
 - A) fuel through the heat exchanger
 - B) both fuel and oil through the heat exchanger
 - C) oil through the heat exchanger L2
- 9. In the axial-flow turbine engine, compressor bleed air is sometime used to aid in cooling the;
 - A) fuel
 - B) inlet guide vane
 - C) turbine vanes, turbine blades and bearing L2
- 10. Which of the following is the function of the fuel-oil heat exchanger on the turbo-jet engine?
 - A) aerates the fuel
 - B) emulsifies the fuel
 - C) increases the fuel temperature L1
- 11. After making welding repair to the pressurized type turbine engine oil tank the tank should be pressure tested checked to;

A) not less than 5 psi plus the maximum operating pressure of the tank L2

- B) not less than 5 psi plus the average operating pressure of the tank
- C) 4 psi-5 psi
- 12. The oil dampened main bearing utilized in some turbine engines is used to:
 - A) provide lubrication of bearings from the beginning of starting rotation until oil pressure is established
 - B) provide an oil film between the outer race and the bearing housing in order to reduce vibration tendencies and to allow for slight misalignment L2
 - C) dampen surges in oil pressure to the bearing
- 13. What unit in the aircraft lubrication system is adjusted to maintain the desire system pressure?
 - A) oil pressure relief valve L1
 - B) oil viscosity valve
 - C) oil pump

- 14. Oil picks up the most heat from which of the following turbine engine components?
 - A) Rotor coupling L2
 - B) Compressor bearing
 - C) Turbine bearing
- 15. What would be the probable result if the oil system pressure relief valve should stick in open position?
 - A) increase oil pressure
 - B) decrease oil temperature
 - C) insufficient lubrication L2
- 16. Possible failure related ferrous-metal particles in turbine engine oil cause an electrical indicating type magnetic chip detector to indicate their presence by:
 - A) disturbing the magnetic line of flux around the chip detector tip
 - B) bridging the gap between detector center(positive) electrode and the ground electrode L3
 - C) generating a small electric current that is caused by particles being in
- 17. The main oil filter strain the oil at which point in the system?
 - A) Immediately after it leaves the scavenge pump
 - B) Immediately before it enters the pressure pump
 - C) Just at it leaves the pressure pumpL2
- 18. What is the purpose of fume proof seal?
 - A) prevent combustible fumes from front section entering rear section that can ignite L1
 - B) locating the engine components for easy maintenance
 - C) prevent the flame from spreading in event of fire occur
- 19. Why are fixed orifice nozzles used in the lubrication system of gas turbine engines:
 - A) to provide a relatively constant oil flow to the main bearings at all engine speeds
 - B) to keep back pressure on the oil pump thus preventing oil lock L1
 - C) to protect the oil seals by preventing excessive pressure from entering the bearing cavities
- 20. The purpose of directing bleed air to the outer casing case on some engine is to:
 - A) provide optimum turbine blade tip clearance by controlling the thermal expansionL3
 - B) provide up to 100 % kinetic extraction from the flowing gases
 - C) allow operation in a thermal environment 600 to 800 ° F above the temperature limits of the turbine blades and vanes alloys

CONFIDENTIAL

21. Engine No. 1 of a twin turbofan engine powered aircraft requires 2 quarts of oil added during ground servicing. The total flight hours since last oil top up is 12 flight hours. Calculate the oil consumption rate for engine No.1?

A) 0.16 qts/hr L1

- B) 0.04 qts/hr
- C) 0.32 qts/hr*
- 22. By turning oil pressure adjusting screw on oil pressure regulator to clockwise Direction:
 - A) increase oil pressure L1
 - B) decrease oil pressure
 - C) remain normal operation
- 23. All reservoirs should have 10 % expansion space for:
 - A) allows for air expansion
 - B) allows room for oil to expand as it heats and allows for the collection of foamL2
 - C) allowing the formation of foam and heated gas
- 24. What are the functions of lubricating oil:
 - A) reduce friction only
 - B) reduce friction, absorb heat, seals, cushions, cleans and protects corrosion L3
 - C) sealing and anti friction properties.
- 25. If incompatible lubricants are accidentally mixed when filling an engine, many manufacturers require:
 - A) drained only
 - B) drained and flushed L2
 - C) wait for next oil change
- 26. What factor is not used in the operation of an aircraft gas turbine engine fuel control unit?
 - A) Compressor inlet air temperature
 - B) Power lever position
 - C) Mixture control position L3
- 27. What causes the fuel divider valve to open in a turbine engine duplex nozzle?
 - A) Fuel pressure L2
 - B) Bleed air after the engine reaches idle RPM
 - C) An electrical operated solenoid

- 28. Which of the following turbine fuel filters has the greatest filtering action?
 - A) Micron L2
 - B) Small wire mesh
 - C) Stacked charcoal
- 29. What is the purpose of the flow divider in a turbine engine duplex nozzle?
 - A) Allows an alternate flow of fuel if the primary flow clogs
 - B) Provides a flow path for bleed air which aids in fuel atomization
 - C) Creates the primary and secondary fuel supplies L3
- 30. Fuel pressure produced by the engine-driven fuel pump is adjusted by:
 - A) Bypass valve adjusting screw
 - B) Engine driven fuel pump adjusting screw
 - C) Relief valve adjusting screw L2
- 31. Kerosene is used as turbine engine fuel because:
 - A) kerosene does not contain any water
 - B) kerosene has very high volatility which aids in ignition and lubrication
 - C) kerosene has more heat energy per gallon and lubricates fuel system components L2
- 32. It is necessary to control acceleration and deceleration rates in order to:
 - A) prevent over temperature
 - B) prevent rich blow-out and lean die-out L2
 - C) prevent friction between turbine wheels and the case due to expansion
- 33. Fuel cross feed systems is used in aircraft to:
 - A) purge the fuel tank
 - B) maintain aircraft stability L1
 - C) jettison fuel. in an emergency
- 34. A turbofan engine used on a DC-10 aircraft is flying at an altitude of 35,000 feet at max continuous cruise power setting. The net thrust is 10,800 pounds, and fuel burned is 7000 pounds per hour. What is the thrust specific fuel consumption?
 - A) **1.54 lb/hr/lbt** L2 B) 0.65 lb/hr/lbt
 - C) 0.32 lb/hr/lbt
 - 12

CONFIDENTIAL A) A direct cranking electric starter B) A starter generator L1 C) Air impingement starting In the start sequence, the starter is usually de-energized; A) As soon as the fuel is ignited B) After the engine has reached a self sustaining speed L3 C) When the pilot releases the start button. Igniter plugs used in turbine engines are subjected to high intensity spark discharges and yet they have a long service life because they : A) Operate at much lower temperatures L1 B) Are not placed directly into the combustion chamber C) Do not require continuous operation

- 57. Which statement is correct regarding the ignition system of a turbine engine :
 - A) The system is normally de-energized as soon as the engine starts
 - B) It is energized during the starting and warm up periods only
 - C) The system generally includes a polar inductor type magneto L3
- 58. Why do turbine engine ignition systems requires high energy?
 - A) To ignite the fuel under conditions of high altitude and high temperatures
 - B) Because the applied voltage is much greater
 - C) To ignite the fuel under conditions of high altitude and low temperatures L1
- 59. Which of the following are included in a typical turbine engine ignition system?
 - A) Two transformers, one exciter unit, two intermediate ignition leads
 - B) Two igniter units, two intermediate ignition leads, two low tension igniter leads
 - C) Two igniter units, one exciter unit, two high tension igniter leads L2
- 60. Generally, the firing end of an igniter requires little cleaning because :
 - A) They are removed and clean daily L2blast
 - B) Dirt does not matter

55.

56.

- C) The intense spark tends to blast away any deposits
- 61. In a low tension and high tension system, the bleeder resistor its to allow:

- A) the storage capacitor to discharge slowly when the system is deenergized (Off).L3
- B) the storage capacitor to keep it charge for long period of time.
- C) the transformer to cool down.
- 62. A turbine engine ignition system with a stored voltage of 2000 Volts DC has an ionizing voltage at the plug of 500 Volts DC. The current in the system is 200 amps, and the spark jumps the igniter gap in 40 millionths of a second (0.000040 sec). What would be the joule rating on this ignition system?
 - D) 4 joules
 - E) 6 joules L1
 - A) 8 joules L2
- 63. When using an electric starter motor, the current flow through it;
 - A) Is highest just before starter cutoff (at highest RPM)
 - B) Remains relatively constant throughout the starting cycle
 - C) Is highest at the start of motor rotation L2
- 64. A clicking sound heard at engine coast-down in a pneumatic starter incorporating a sprat clutch ratchet assembly is an indication of;
 - A) Gear tooth and pawl damage
 - B) One or more broken pawl springs
 - C) The pawls is re-contacting and riding on the ratchet gear L3
- 65. A safety feature usually employed in pneumatic starters that is used to prevent the starter from reaching burst speed if inlet air does not terminate on schedule is the;
 - A) Drive shaft shear point
 - B) Stator nozzle design that chokes airflow and stabilizes turbine wheel speed L3
 - C) Spring coupling release
- 66. The primary advantage of pneumatic (air turbine) starters over comparable electric starters for turbine engines is;
 - A) A decreased fire hazard
 - B) Reduction gearing not required
 - C) High power to weight ratio L2
- Generally, when removing a turbine engine igniter plug in order to eliminate the possibility of the technician receiving a lethal shock the ignition switch is turned off and;

- A) Disconnect from the power supply circuit
- B) The igniter lead is disconnected from the plug and the center electrode grounded to the engine after disconnecting the transformer-exciter input lead and waiting the prescribed time.
- C) After the switch is off and isolated from the system
- 68. The capacitor-type ignition system is used almost universally on turbine engines primarily because of its high voltage and;
 - A) Low amperage
 - B) Long life
 - C) High-heat intensity L2
- 69. The purpose of an under current relay in a starter-generator system is to;
 - A) Provide a backup for the motor relay
 - B) Disconnect power from the starter-generator and ignition when sufficient engine speed is reached L3
 - C) Keep current flow to the starter-generator under the circuit capacity maximum
- 70. Airflow to the pneumatic starter from a ground unit is normally prevented from causing starter overspeed during engine start by
 - A) Stator nozzle design that chokes airflow and stabilizes turbine wheel speed
 - B) Activation of a flyweight cutout switch L2
 - C) A preset timed cutoff of the airflow at the source
- 71. In a turbine engine dc capacitor discharge high energy ignition system where are the high-voltage pulses formed;
 - A) At the breaker point
 - B) At the triggering transformer L2
 - C) At the rectifier
- 72. Why are turbine engine igniters is less susceptible to fouling than spark plug;
 - A) The high-intensity spark cleans the igniter L2
 - B) The frequency of the spark is less for igniters
 - C) Turbine igniters operate at cooler temperatures.
- 73. In the event a pneumatic start valve will not operate and the manual override must be used, the starter T handle must be closed at scheduled starter drop out because
 - A) The starter will overheat L2
 - B) The starter will overspeed at a given N2

- C) The starter oil will be blown over board
- 74. Air turbine starters are generally designed so that reduction gear distress or damage may be detected by
 - A) Characteristic sounds from the starter assembly during engine start
 - B) Breakage of a shear section on the starter drive shaft
 - C) Inspection of a magnetic chip detector
- 75. A safety feature usually employed in pneumatic starters that is used if the clutch does not release from the engine drive at the proper time during start is;
 - A) Flyweight cutout switch
 - B) Spring coupling release
 - C) Drive shaft shear point L2

EASA PT66 BLOGSPOT

15.9 Lubricants and Fuels.

Question Number.1.Kerosene will burn effectively at an air/fuel ratio of.Option A.150:1.Option B.15:1.Option C.45:1.Correct Answer is.15:1.Explanation.NIL.

Question Number. 2. When using Prist or Biopor.
Option A. it is left and burnt with the fuel.
Option B. it is diluted with water to a 3-1 mix.
Option C. it is flushed out immediately.
Correct Answer is. it is left and burnt with the fuel.
Explanation. Jepperson Gas Turbine Powerplants Page 7-2 refers.

Question Number.3.What is D.E.R.D 2494?.Option A.Oil.Option B.Wide cut gasoline.Option C.Kerosene.Correct Answer is.Kerosene.Explanation.Jeppesen Aircraft Gas Turbine Power plant page 7-1 refers.

Question Number. 4. A high viscosity index means the oil viscosity.
Option A. will vary greatly with temperature change.
Option B. has a large index number.
Option C. will not vary greatly with temperature change.
Correct Answer is. will not vary greatly with temperature change.
Explanation. Jeppesen Aircraft Gas Turbine Powerplant Page 6-2 Refers.

| Question Num | ber. 5. | A fuel system icing inhibitor is a fuel additive which. |
|--------------|-----------------|---|
| Option A. | prevents both | the water and the fuel freezing. |
| Option B. | prevents the fu | uel from freezing. |

Option C. prevents the water in the fuel freezing. Correct Answer is. prevents the water in the fuel freezing. Explanation. Jeppesen Gas Turbine Powerplants Page 7-2 refers.

Question Number. 6. What will be the result of operating an engine in extremely high temperatures using a lubricant recommended by the manufacturer for a much lower temperature?.

Option A.The oil pressure will be lower than normal.Option B.The oil temperature and oil pressure will be higher than normal.Option C.The oil pressure will be higher than normal.Correct Answer is.The oil pressure will be lower than normal.Explanation.NIL.

Question Number. 7. The time in seconds required for exactly 60 cubic centimeters of oil to flow through an accurately calibrated orifice at a specific temperature is recorded as a measurement of the oil's.

Option A. specific gravity. Option B. flash point. Option C. viscosity. Correct Answer is. viscosity. Explanation. NIL.

Question Number. 8. Upon what quality or characteristic of a lubricating oil is its viscosity index based?.

Option A. Its rate of flow through an orifice at a standard temperature.

Option B. Its rate of change in viscosity with temperature change.

Option C. Its resistance to flow at a standard temperature as compared to high grade paraffin base oil at the same temperature.

Correct Answer is. Its rate of change in viscosity with temperature change. Explanation. NIL.

Question Number. 9. Compared to reciprocating engine oils, the types of oils used in turbine engines.

Option A. are required to carry and disperse a higher level of combustion by-products. Option B. have less tendency to produce lacquer or coke.

Option C. may permit a somewhat higher level of carbon formation in the engine.

Correct Answer is. have less tendency to produce lacquer or coke.

Explanation. Jeppesen A&P Technician Propulsion Textbook 9-25.

Question Number. 10. If all other requirements can be met, what type of oil should be used to achieve theoretically perfect engine lubrication?.
Option A. An oil that combines high viscosity and low demulsibility.
Option B. The thinnest oil that will stay in place and maintain a reasonable film strength.
Option C. An oil that combines a low viscosity index and a high neutralization number.
Correct Answer is. The thinnest oil that will stay in place and maintain a reasonable film strength.
Explanation. NIL.

Question Number. 11. In addition to lubricating (reducing friction between moving parts), engine oil performs what functions?.

Option A. Cools, seals, prevents corrosion.

Option B. Cools, seals, prevents corrosion, cushions shock loads.

Option C. Cools and seals.

Correct Answer is. Cools, seals, prevents corrosion, cushions shock loads.

Explanation. NIL.

Question Number. 12. The viscosity of a liquid is a measure of its.
Option A. weight, or density.
Option B. rate of change of internal friction with change in temperature.
Option C. resistance to flow.
Correct Answer is. resistance to flow.
Explanation. NIL.

Explanation. MIL.

Question Number. 13. Which of the following factors helps determine the proper grade of oil to use in a particular engine?.

Option A. Adequate lubrication in various attitudes of flight.

Option B. Operating speeds of bearings.

Option C. Positive introduction of oil to the bearings.

Correct Answer is. Operating speeds of bearings.

Explanation. NIL.

Question Number.14.Specific gravity is a comparison of the weight of a substance to the
weight of an equal volume of.Option A.oil at a specific temperature.Option B.mercury at a specific temperature.Option C.distilled water at a specific temperature.

Correct Answer is. distilled water at a specific temperature.

Question Number. 15. What advantage do mineral base lubricants have over vegetable oil base lubricants when used in aircraft engines?.

Option A. Cooling ability.

Option B. Chemical stability.

Option C. Friction resistance.

Correct Answer is. Chemical stability.

Explanation. NIL.

Question Number. 16. High tooth pressures and high rubbing velocities, such as occur with spur type gears, require the use of.

Option A. an E.P lubricant.

Option B. metallic ash detergent oil.

Option C. straight mineral oil.

Correct Answer is. an E.P lubricant.

Explanation. NIL.

Question Number. 17. Which of these characteristics is desirable in turbine engine oil?.

| Option A. | High volatility. |
|---------------|---|
| Option B. | High flash point. |
| Option C. | Low flash point. |
| Correct Answe | er is. High flash point. |
| Explanation. | Jeppesen A&P Technician Propulsion Textbook 9-25. |

Question Number. 18. What action is taken to protect integral fuel tanks from corrosion due to micro biological contamination?.

Option A. Rubber liners are installed in the tank.

Option B. A biocidal additive is added to the fuel.

Option C. The inside of the tank is coated with yellow chromate.

Correct Answer is. A biocidal additive is added to the fuel.

Explanation. Jeppesen Aircraft Gas Turbine Powerplant Page 7-2 refers.

Question Number. 19. What should be checked/changed to ensure the validity of a turbine engine performance check if an alternate fuel is to be used?. Option A. Maximum RPM adjustment.

Option B.Fuel specific gravity setting.Option C.EPR gauge calibration.Correct Answer is.Fuel specific gravity setting.Explanation.NIL.

Question Number. 20. Kerosene is used as turbine engine fuel because.
Option A. kerosene has more heat energy per gallon and lubricates fuel system components.
Option B. kerosene has very high volatility which aids in ignition and lubrication.
Option C. kerosene does not contain any water.
Correct Answer is. kerosene has more heat energy per gallon and lubricates fuel system components.
Explanation. NIL.

Question Number.21.Calorific value is the.Option A.amount of heat or energy in one pound of fuel.Option B.vaporisation point of fuel.Option C.fuel boiling temperature.Correct Answer is.amount of heat or energy in one pound of fuel.Explanation.Measured in M.J/Kg or BTU/Lb.

Question Number.22.The specific gravity of fuel affects.Option A.thrust rating.Option B.aircraft range.Option C.engine efficiency.Correct Answer is.aircraft range.Explanation.Greater Density for a fixed volume equals greater weight of fuel - hence greater range.

Question Number.23.Oil used in a gas turbine engine is usually.Option A.mineral.Option B.natural.Option C.synthetic.Correct Answer is.synthetic.Explanation.Rolls Royce the Jet Engine Page 83 refers.

Question Number.24.An oil spectroscope measures.Option A.contaminants suspended in the oil.Option B.S.G. of the oil.Option C.contaminants in the surface of the oil.Correct Answer is.contaminants suspended in the oil.

Explanation. See Jeppesen Aircraft Gas Turbines Page 6-2 for oil sampling by spectrometer analysis.

Question Number. 25. Ignition of fuel depends upon.
Option A. volatility.
Option B. atomisation.
Option C. both volatility and atomisation.
Correct Answer is. both volatility and atomisation.
Explanation. A volatile fuel will vapourise more easily. if it is a low volatility fuel (Jet-A1 etc)then the fuel is atomised through spray nozzles into the combustion chamber.

Question Number.26.Kerosene is used instead of gasoline because.Option A.kerosene is highly volatile and has good lubrication qualities.Option B.Kerosene is less volatile and has good lubrication properties.Option C.kerosene has a higher volatility than gasoline and has good lubrication abilities.Correct Answer is.Kerosene is less volatile and has good lubrication properties.Explanation.Kerosene is a more stable fuel for storage and handling.

Question Number.27.If the specific gravity of a fuel is increased, the weight of a tank offuel will.Option A.decrease.Option B.remain the same.Option C.increase.Correct Answer is.increase.Explanation.SG = Weight of fuel relative to water.

Question Number.28.Reid vapour pressure, is the vapour pressure exerted by a fuel when
heated to.Option A.38°C.Option B.48°C.Option C.15°C.Correct Answer is.38°C.Explanation.Rolls Royce The Jet Engine page 118 para 113.

15.10 Lubrication Systems.

Question Number.1.The oil pressure in the cooler is.Option A.same as the fuel pressure.Option B.lower than the fuel pressure.Option C.higher than the fuel pressure.Correct Answer is.higher than the fuel pressure.Explanation.NIL.

Question Number. 2. When rotating, the gear type oil pump.
Option A. draws oil into the pump and carries it round between the gear teeth and casing.
Option B. draws oil into the pump and through the intermeshing gears to the outlet.
Option C. draws oil into the pump, half being carried around between pump and casing, the other half passing between the gears to the outlet.
Correct Answer is. draws oil into the pump and carries it round between the gear teeth and casing.
Explanation. NIL.

Question Number. 3. A scavenge filter is incorporated in a gas turbine lubrication system to.

Option A. protect the scavenge pump.

Option B. protect the oil cooler.

Option C. protect the pressure pump.

Correct Answer is. protect the pressure pump.

Explanation. RR The Jet Engine (New Edition) Page 181.

Question Number. 4. The working fluid of a constant speed drive (C.S.D) is.

Option A. from separate tank.

Option B. within the unit.

Option C. taken from the engine lubrication system.

Correct Answer is. within the unit.

Explanation. C.S.Ds and I.D.Gs have their own self contained oil system.

Question Number. 5. What is the possible cause when a turbine engine indicates no change in power setting parameters, but oil temperature is high?.
Option A. High scavenge pump oil flow.
Option B. Turbine damage and/or loss of turbine efficiency.
Option C. Engine main bearing distress.
Correct Answer is. Engine main bearing distress.

Question Number.6.How is engine oil usually cooled?.Option A.By a fuel/oil cooler.Option B.By ram air.Option C.By bleed air.Correct Answer is.By a fuel/oil cooler.

Explanation. Jeppesen Gas Turbine Powerplants Page 6-25 Refers.

Question Number. 7. What filters are used to protect oil pressure spray jets?.

- Option A. Felt/paper filters.
- Option B. In-line thread filters.
- Option C. Micronic filters.

Correct Answer is. In-line thread filters.

Explanation. RR book page 82 states that thread type filters are used as last chance filters.

Question Number. 8. The chip detector in the oil system is a.

Option A. window in the pump casing.

Option B. window in the oil pump.

Option C. magnetic plug in the return line.

Correct Answer is. magnetic plug in the return line.

Explanation. Jeppesen Gas Turbine Powerplant Page 6-26 refers.

Question Number. 9. When rotating, the gyroter type oil pump. Option A. oil is drawn into the pump and through the intermeshing gears to the outlet. Option B. oil is drawn into the pump, half being carried around between pump and casing, the other half passing between the gears to the outlet.

Option C. draws oil into the pump and carries it round between the gear teeth and casing. Correct Answer is. draws oil into the pump and carries it round between the gear teeth and casing.

Explanation. Jeppesen Aircraft Gas Turbine Powerplant Page 6-14 Refers.

Question Number. 10. Oil picks up the most heat from which of the following turbine engine components?.

Option A. Compressor bearing.

Option B. Rotor coupling.

Option C. Turbine bearing. Correct Answer is. Turbine bearing. Explanation. Jeppesen A&P Technician Propulsion Textbook 9-31.

Question Number.11.In a jet engine which uses a fuel oil heat exchanger, the oiltemperature is controlled by a thermostatic valve that regulates the flow of.Option A.both fuel and oil through the heat exchanger.Option B.oil through the heat exchanger.Option C.fuel through the heat exchanger.Correct Answer is.oil through the heat exchanger.Explanation.Jeppesen A&P Technician Propulsion Textbook 9-32.

Question Number. 12. What is the purpose of the last chance oil filters?.
Option A. To filter the oil immediately before it enters the main bearings.
Option B. To assure a clean supply of oil to the lubrication system.
Option C. To prevent damage to the oil spray nozzle.
Correct Answer is. To prevent damage to the oil spray nozzle.
Explanation. Jeppesen A&P Technician Propulsion Textbook 9-30.

Question Number. 13. Which of the following is a function of the fuel oil heat exchanger on a turbojet engine?.

Option A. Aerates the fuel.

Option B. Emulsifies the oil.

Option C. Increases fuel temperature.

Correct Answer is. Increases fuel temperature.

Explanation. Jeppesen A&P Technician Propulsion Textbook 9-32.

Question Number. 14. At cruise RPM, some oil will flow through the relief valve of a gear type engine oil pump. This is normal as the relief valve is set at a pressure which is.

Option A. higher than pressure pump capabilities.

Option B. lower than the pressure pump capabilities.

Option C. lower than the pump inlet pressure.

Correct Answer is. lower than the pressure pump capabilities.

Explanation. NIL.

Question Number. 15. What will happen to the return oil if the oil line between the scavenger pump and the oil cooler separates?.
Option A. Oil will accumulate in the engine.

Option B. The scavenger return line check valve will close and force the oil to bypass directly to the intake side of the pressure pump.

Option C. The return oil will be pumped overboard.

Correct Answer is. The scavenger return line check valve will close and force the oil to bypass directly to the intake side of the pressure pump.

Explanation. NIL.

Question Number. 16. The oil dampened main bearing utilized in some turbine engines is used to.

Option A. dampen surges in oil pressure to the bearings.

Option B. provide lubrication of bearings from the beginning of starting rotation until normal oil pressure is established.

Option C. provide an oil film between the outer race and the bearing housing in order to reduce vibration tendencies in the rotor system, and to allow for slight misalignment.

Correct Answer is. provide an oil film between the outer race and the bearing housing in order to reduce vibration tendencies in the rotor system, and to allow for slight misalignment. Explanation. NIL.

Question Number. 17. After making a welded repair to a pressurized type turbine engine oil tank, the tank should be pressure checked to.

Option A. not less than 5 PSI plus the maximum operating pressure of the tank.

Option B. not less than 5 PSI plus the average operating pressure of the tank.

Option C. 5 PSI.

Correct Answer is. not less than 5 PSI plus the maximum operating pressure of the tank. Explanation. Jeppesen A&P Technician Propulsion Textbook 9-37.

Question Number. 18. Possible failure related ferrous metal particles in turbine engine oil cause an (electrical) indicating type magnetic chip detector to indicate their presence by.

Option A. bridging the gap between the detector center (positive) electrode and the ground electrode.

Option B. generating a small electric current that is caused by the particles being in contact with the dissimilar metal of the detector tip.

Option C. disturbing the magnetic lines of flux around the detector tip.

Correct Answer is. bridging the gap between the detector center (positive) electrode and the ground electrode.

Explanation. Jeppesen A&P Technician Propulsion Textbook 9-33.

Question Number. 19. What would be the probable result if the oil system pressure relief valve should stick in the open position on a turbine engine?.

Option A. Increased oil pressure.

Option B. Decreased oil temperature.

Option C. Insufficient lubrication. Correct Answer is. Decreased oil temperature. Explanation. NIL.

Question Number. 20. What is the primary purpose of the oil to fuel heat exchanger?.

Option A.De aerate the oil.Option B.Cool the oil.Option C.Cool the fuel.Correct Answer is.Cool the oil.Explanation.Jeppesen A&P Technician Propulsion Textbook 9-32.

Question Number.21.Low oil pressure can be detrimental to the internal engine
components. However, high oil pressure.Option A.has a negligible effect.Option B.will not occur because of pressure losses around the bearings.Option C.should be limited to the engine manufacturer's recommendations.Correct Answer is.should be limited to the engine manufacturer's recommendations.Explanation.NIL.

Question Number. 22. What is the primary purpose of the oil breather pressurization system that is used on turbine engines?

Option A. Prevents foaming of the oil.

Option B. Allows aeration of the oil for better lubrication because of the air/oil mist.

Option C. Provides a proper oil spray pattern from the main bearing oil jets.

Correct Answer is. Prevents foaming of the oil.

Explanation. NIL.

Question Number. 23. What type of oil system is usually found on turbine engines?.

Option A. Dry sump, dip, and splash.

Option B. Dry sump, pressure, and spray.

Option C. Wet sump, spray, and splash.

Correct Answer is. Dry sump, pressure, and spray.

Explanation. Jeppesen A&P Technician Propulsion Textbook 9-26.

Question Number. 24. How are the teeth of the gears in the accessory section of an engine normally lubricated?.

Option A. By surrounding the load bearing portions with baffles or housings within which oil pressure can be maintained.

Option B. By splashed or sprayed oil.

Option C. By submerging the load bearing portions in oil. Correct Answer is. By splashed or sprayed oil. Explanation. NIL.

Question Number. 25. Manufacturers normally require turbine engine oil servicing within a short time after engine shutdown primarily to.

Option A. prevent over servicing.

Option B. help dilute and neutralize any contaminants that may already be present in the engine's oil system.

Option C. provide a better indication of any oil leaks in the system.

Correct Answer is. prevent over servicing.

Explanation. Jeppersen A&P Technician Powerplant Book Page 9-36.

Question Number. 26. In order to relieve excessive pump pressure in an engine's internal oil system, most engines are equipped with a.

Option A. vent. Option B. relief valve. Option C. bypass valve. Correct Answer is. relief valve. Explanation. NIL.

Question Number.27.The type of oil pumps most commonly used on turbine engines are
classified as.Option A.positive displacement.Option B.constant speed.Option C.variable displacement.Correct Answer is.positive displacement.

Explanation. Jeppesen A&P Technician Propulsion Textbook 9-28.

Question Number. 28. If the oil in the oil cooler core and annular jacket becomes congealed, what unit prevents damage to the cooler?.

Option A. Oil pressure relief valve.

Option B. Airflow control valve.

Option C. Surge protection valve.

Correct Answer is. Oil pressure relief valve.

Explanation. NIL.

Question Number. 29. What will result if an oil filter becomes completely blocked?.

Option A. Oil flow to the engine will stop.

Option B.Oil will flow at the normal rate through the system.Option C.Oil will flow at a reduced rate through the system.Correct Answer is.Oil will flow at the normal rate through the system.Explanation.NIL.

Question Number.30.A turbine engine dry sump lubrication system of the self contained,
high pressure design.Option A.stores oil in the engine crankcase.Option B.has no heat exchanger.

Option B. has no heat exchanger.

Option C. consists of pressure, breather, and scavenge subsystems.

Correct Answer is. consists of pressure, breather, and scavenge subsystems.

Explanation. NIL.

Question Number. 31. What is the primary purpose of the hopper located in the oil supply tank of some dry sump engine installations?.

Option A. To reduce the time required to warm the oil to operating temperatures.

Option B. To impart a centrifugal motion to the oil entering the tank so that the foreign particles in the oil will separate more readily.

Option C. To reduce surface aeration of the hot oil and thus reduce oxidation and the formation of sludge and varnish.

Correct Answer is. To reduce the time required to warm the oil to operating temperatures. Explanation. Jeppesen A&P Technician Propulsion Textbook 9-11.

Question Number. 32. What determines the minimum particle size which will be excluded or filtered by a cuno type (stacked disc, edge filtration) filter?.

Option A. Both the number and thickness of the discs in the assembly.

Option B. The spacer thickness.

Option C. The disc thickness.

Correct Answer is. The spacer thickness.

Explanation. Jeppesen A&P Technician Propulsion Textbook 9-17.

Question Number. 33. A full flow oil system has.

Option A. a single fixed minimum oil pressure.

Option B. a variable oil pressure dependant upon throttle setting.

Option C. a hot and cold oil pressure limit.

Correct Answer is. a variable oil pressure dependant upon throttle setting.

Explanation. This system does not have a pressure regulating valve, only a max pressure relief valve for safety purposes.

Question Number. 34. A felt filter in an oil lubrication system should be.

Option A.removed and cleaned in M.E.K.Option B.removed and replaced with a new filter element.Option C.removed and cleaned in a container of lead free petrol.Correct Answer is.removed and replaced with a new filter element.Explanation.Jeppesen Aircraft Gas Turbines Powerplant page 6-14 refers.

Question Number. 35. What filter is used in a oil scavenge pump in the inlet side of the pump?.

Option A. Wire wound filter.

Option B. Threaded filter.

Option C. Wire mesh filter.

Correct Answer is. Wire mesh filter.

Explanation. Rolls Royce The Jet engine page 82 refers to a coarse strainer fatted to the inlet of oil pumps. Wire mesh is considered to be the same thing.

Question Number. 36. A vane type oil pump output is controlled by.

Option A. outlet pressure against spring pressure.

Option B. outlet pressure controlling servo.

Option C. output pressure controlling plate angle.

Correct Answer is. outlet pressure against spring pressure.

Explanation. Jeppesen Aircraft gas Turbine Powerplants page 6-10 refers.

Question Number. 37. The sump in a dry sump oil system.

Option A. is used as a collecting point only.

Option B. houses all the engine oil.

Option C. provides lubrication for the main bearings.

Correct Answer is. is used as a collecting point only.

Explanation. Dry sumps are scavenged back to the reservoir.

Question Number. 38. A jet engine gear box breather is prevented from leaking oil to atmosphere by the action of.

Option A. air or oil valve.

Option B. oil thrower ring and centrifugal force.

Option C. impeller and centrifugal force.

Correct Answer is. impeller and centrifugal force.

Explanation. Refer to page 81 Rolls Royce The Jet Engine for a diagram of a gearbox centrifugal breather.

Question Number. 39. The air-cooled-oil-cooler has an anti-surge valve in order to.

Option A. protect the cooler.

Option B. restrict the engine max oil pressure.

Option C. stop oil draining from the system when the cooler is removed. Correct Answer is. protect the cooler.

Explanation. The term anti surge valve is unusual, an oil pressure relief bypass valve is a better description.

Question Number.40.A thread type oil seal in a lubrication system.Option A.screws oil back into the bearing sump when the shaft rotatesOption B.has a thread on a stationary portion to prevent fluid leaks.Option C.only seals when stationary.Correct Answer is.has a thread on a stationary portion to prevent fluid leaks.Explanation.This is a type of labyrinth seal, see page 92 of The Jet Engine.

Question Number. 41. The oil system generally used on most modern turboprop engines is.

Option A.dry sump type.Option B.wet sump type.Option C.A low pressure system.Correct Answer is.dry sump type.Explanation.The oil is contained in a separate oil tank.Question Number.42.A spur gear pump operating in a lubrication system promotes.

Option A.high flow at low pressure.Option B.low flow at low pressure.Option C.low flow at high pressure.Correct Answer is.low flow at high pressure.Explanation.NIL.

Question Number. 43. Last chance' filters in a lubrication system are serviced during.

Option A.line maintenance.Option B.routine oil change.Option C.engine overhaul.Correct Answer is.engine overhaul.Explanation.NIL.

Question Number. 44. The identification of a lubrication fluid line is the word 'lubrication'.

Option A.followed by a caution.Option B.followed by squares.Option C.followed by circles.Correct Answer is.followed by squares.

Explanation. NIL.

15.11 Fuel Systems.

Question Number.1.If the swash plate of a positive displacement swash plate pump is
perpendicular to the axis of the pump, the flow will be.Option A.reversed.Option B.zero.Option C.maximum.Correct Answer is.zero.Explanation.NIL.

Question Number.2.What moves the swash plate away from the minimum stroke
position?.Option A.Reduced inlet pressure.Option B.A spring.Option C.Increased servo pressure.Correct Answer is.A spring.

Question Number.3.The burner fuel flow is at maximum at.Option A.10°Centigrade above I.S.A. sea level.Option B.I.S.A. sea level.Option C.altitude.Correct Answer is.I.S.A. sea level.Explanation.NIL.

Question Number. 4. How is servo pressure, which is used to control fuel pump 'Swash Plate' angle obtained?.
Option A. From pump delivery pressure through variable restrictions.
Option B. From pump delivery pressure through fixed restrictions.
Option C. From pump inlet pressure through fixed restrictions.
Correct Answer is. From pump delivery pressure through variable restrictions.
Explanation. NIL.

Question Number. 5. What would be the effect on the engine if the B.P.C half ball valve in the servo line sticks open?.

Option A. A reduction of fuel flow, therefore a decrease in RPM .

Option B.The B.P.C would be ineffective at sea level only.Option C.An increase of fuel flow, therefore an increase in RPM .Correct Answer is.An increase of fuel flow, therefore an increase in RPM .

Question Number. 6. Why is an A.C.U fitted to a gas turbine engine?.
Option A. It increases the rate of acceleration of the engine.
Option B. It controls the operation of the metering block during sudden acceleration.
Option C. It limits the rate of increase in fuel flow during sudden acceleration.
Correct Answer is. It limits the rate of increase in fuel flow during sudden acceleration.
Explanation. NIL.

Question Number.7.If fuel pump servo pressure is reduced, pump output will.Option A.increase.Option B.decrease.Option C.remain constant.Correct Answer is.decrease.Explanation.Old RR book Page 100 figure.10-5.

Question Number. 8. Why is the B.P.C fitted in a gas turbine engine fuel system?.

Option A.To vary pressure pump output in relation to the pressure variation at the intake.Option B.To proportion the fuel flow between primary and main burner lines.Option C.To decrease the fuel flow to the burners with increased air intake pressure.Correct Answer is.To vary pressure pump output in relation to the pressure variation at the intake.

Explanation. NIL.

Question Number. 9. What must be done after the fuel control unit has been replaced on an aircraft gas turbine engine?.

Option A. You must recalibrate the fuel nozzles.

Option B. You must retrim the engine.

Option C. You must perform a full power engine run to check fuel flow.

Correct Answer is. You must retrim the engine.

Explanation. Jeppesen A&P Powerplant Textbook 4-12.

Question Number. 10. A kinetic valve is a device used to control H.P pump output. This is achieved by movement of a.

Option A. needle valve.

Option B. diaphragm and half ball valve.

Option C. knife blade.

Correct Answer is. knife blade. Explanation. NIL.

Question Number.11.Specific fuel consumption at altitude will.Option A.decrease.Option B.remain constant.Option C.increase.Correct Answer is.increase.Explanation.NIL.

Question Number. 12. During any stabilised running condition, the spill or half ball valve is.

Option A. lightly seated. Option B. closed fully. Option C. open fully. Correct Answer is. lightly seated. Explanation. NIL.

Question Number. 13. What is the purpose of the attenuator fitted between the H.P fuel pump and the B.P.C in a fuel system?.
Option A. It restricts the pressure feed top the B.P.C.
Option B. It ensures a supply of fuel free from foreign matter to the BC half ball valve.
Option C. It damps out pulsations in the fuel delivery to the B.P.C.
Correct Answer is. It damps out pulsations in the fuel delivery to the B.P.C.
Explanation. NIL.

Question Number. 14. Why is the hydromechanical governor fitted to a gas turbine engine fuel pump?.
Option A. To enable the engine to operate over a wide range of fuel SGs.
Option B. To enable efficient control of fuel flow to be maintained at altitude.
Option C. To enable the engine to operate over a wide range of fuel flow.
Correct Answer is. To enable the engine to operate over a wide range of fuel SGs.
Explanation. NIL.

| Question Number. 15. | | A barometric Pressure Controller controls. | | |
|----------------------|---|--|--|--|
| Option A. | barometric pro | essure. | | |
| Option B. | fuel flow to suit atmospheric pressure changes. | | | |
| Option C. | fuel tank press | sure at altitude. | | |
| Correct Answe | er is. fuel fl | ow to suit atmospheric pressure changes. | | |

Explanation. NIL.

Question Number.16.Kinetic valves are used because.Option A.they are less likely to leak.Option B.they are more sensitive.Option C.they are not subjected to wear.Correct Answer is.they are more sensitive.Explanation.NIL.

Question Number.17.When considering a centrifugal type engine speed governor, anincrease in fuel S.G. will cause.Option A.no change in maximum RPM .Option B.an increase in maximum RPM .Option C.a reduction in maximum RPM .Correct Answer is.a reduction in maximum RPM .Explanation.NIL.

Question Number. 18. On a FADEC engine.

Option A. A channel uses control alternator and B channel uses aircraft bus power.

Option B. A channel uses a separate winding of the control alternator to B channel.

Option C. A and B channel use the same phases of the motor.

Correct Answer is. A channel uses a separate winding of the control alternator to B channel. Explanation. Jepperson Gas Turbine Powerplant Page 7-22 refers.

Question Number.19.Normal fuel/air ratio for successful combustion is.Option A.15:1.Option B.25:1.Option C.10:1.Correct Answer is.15:1.Explanation.Jepperson Gas Turbine Powerplants Page 3-32.

Question Number. 20. Which of the following influences the operation of an automatic fuel control unit on a turbojet engine?.

Option A. Exhaust gas temperature.

Option B. Mixture control position.

Option C. Burner pressure.

Correct Answer is. Burner pressure.

Explanation. Jeppesen A&P Powerplant Textbook 7-63.

Question Number. 21. What is the purpose of the L.P. pump?.
Option A. To ensure rapid acceleration when the throttle is opened.
Option B. To prevent cavitation of the H.P Fuel pump.
Option C. To ensure the engine will continue to run if the H.P. fuel pump fails.
Correct Answer is. To prevent cavitation of the H.P Fuel pump.
Explanation. NIL.

Question Number.22.The fuel pump plungers are lubricated by.Option A.synthetic anti-freeze oil.Option B.grease packed bearings.Option C.the Fuel.Correct Answer is.the Fuel.Explanation.NIL.

Question Number. 23. Which forces control the maximum RPM governor in a non-hydromechanical swashplate type of pump?.

Option A. Rotor centrifugal pressure opposed to tension spring loading.

Option B. Rotor centrifugal pressure plus tension spring loading opposed to pump delivery pressure.

Option C. Rotor centrifugal pressure plus tension spring loading opposed to pump inlet pressure.

Correct Answer is. Rotor centrifugal pressure opposed to tension spring loading. Explanation. NIL.

Question Number. 24. Why do the holes in the body of the duple burner provide air to the shroud around the burner head?.

Option A. To reduce burner temperature.

Option B. To assist atomisation of the fuel at slow running.

Option C. To minimise carbon formation on the burner face.

Correct Answer is. To minimise carbon formation on the burner face.

Explanation. NIL.

Question Number. 25. A fuel heater prevents.

Option A. Neither.

Option B. LP filter icing.

Option C. H.P filter icing.

Correct Answer is. LP filter icing. Explanation. Jepperson Gas Turbine Powerplants Page 7-45 refers.

| Question Num | ber. | 26. | On a FADEC engine the E.E.C. |
|---------------|----------|---------|---|
| Option A. | has elec | tronic | control of the hydro-mechanical fuel control in some modes. |
| Option B. | has mee | chanica | l control of the hydro-mechanical fuel control system. |
| Option C. | has elec | tronic | control of the hydro-mechanical fuel control unit in all modes. |
| Correct Answe | er is. | has ele | ctronic control of the hydro-mechanical fuel control unit in all modes. |

Explanation. Jepperson Gas Turbine Powerplants Page 7-20 refers.

| Question Num | ber. 27. | During normal running conditions, combustion is. | |
|-------------------------------------|-----------------|--|--|
| Option A. | continuously s | supported by ignition. | |
| Option B. | self supporting | g. | |
| Option C. | intermittently | supported by ignition. | |
| Correct Answer is. self supporting. | | | |
| Explanation. | NIL. | | |

Question Number. 28. On a FADEC engine, the channel reset.

Option A. always selects A channel.

Option B. selects B channel.

Option C. selects standby which becomes active on the next start.

Correct Answer is. selects standby which becomes active on the next start.

Explanation. CF6-80 C2 FADEC Engine Course notes refer.

Question Number. 29. With a decrease in fuel SG, what is the result when the engine is fitted with an uncompensated fuel governor?.

Option A. No effect.

Option B. Maximum RPM decrease.

Option C. Maximum RPM increase.

Correct Answer is. Maximum RPM increase.

Explanation. Rolls Royce Para 103 Page 116 refers.

Question Number. 30. The maximum RPM of a turbine engine is limited by.

Option A. a temperature sensitive device which reduces the fuel pump speed.

Option B. diversion of some of the fuel pump outlet flow by a spill valve sensitive to burner fuel pressure.

Option C. reduction of the fuel pump stroke by a spill valve sensitive to centrifugally generated fuel pressure.

Correct Answer is. reduction of the fuel pump stroke by a spill valve sensitive to centrifugally generated fuel pressure. Explanation. Rolls Royce The Jet Engine Page 103 Para 23 Refers.

Question Number. 31. To what condition does the fuel flow respond during aircraft acceleration?.
Option A. Mass airflow rate through the engine.
Option B. The effect of 'ram-air' at altitude.
Option C. The change in pressure at the compressor intake.
Correct Answer is. Mass airflow rate through the engine.
Explanation. Jeppesen Gas Turbine Powerplants Page 7-6 Refers. This refers to the parameters that make mass airflow- T2 and N2 in particular.

Question Number. 32. During acceleration, the fuel flow is increased at a controlled rate in order to.

Option A. prevent fuel pump damage.

Option B. increase s.f.c.

Option C. prevent surge and the risk of flame-out.

Correct Answer is. prevent surge and the risk of flame-out.

Explanation. Over fuelling during acceleration is a prime cause of surge.

Question Number. 33. The B.P.C controls the F.C.U by.

Option A. pressure sensing.

Option B. temperature sensing.

Option C. density sensing.

Correct Answer is. pressure sensing.

Explanation. BPC is the Barometric Pressure Control.

Question Number.34.If the swash plate of a positive displacement swash plate pump is
perpendicular to the axis of the pump, the flow will be.Option A.zero.Option B.reversed.Option C.maximum.Correct Answer is.zero.Explanation.Rolls Royce Jet Engine Page 98-99 refers.

Question Number.35.The burner fuel flow is at maximum at.Option A.altitude.Option B.10°Centigrade above I.S.A. sea level.Option C.I.S.A. sea level.Correct Answer is.I.S.A. sea level.

Explanation. Cold dense air requires more fuel than hot warm air to maintain the air-fuel ratio.

Question Number. 36. The type of fuel control unit most commonly used in modern jet engines is. Option A. mechanical.

Option B. hydro-mechanical.

Option C. electrical.

Correct Answer is. hydro-mechanical.

Explanation. Rolls Royce Jet Engine Page 99 refers.

Question Number. 37. How is servo pressure, which is used to control fuel pump swash plate angle, obtained?.

Option A. From pump inlet pressure through fixed restrictions.

From pump delivery pressure through fixed restrictions. Option B.

Option C. From pump delivery pressure through variable restrictions.

Correct Answer is. From pump delivery pressure through variable restrictions.

Explanation. Servo pressure is initially supplied through a fixed restrictor, then modified by half ball valve and kinetic knives Rolls Royce The Jet Engine page 98-101 refers.

38. Question Number. Why is the Barometric Pressure Control fitted in a turboshaft engine fuel system?.

Option A. To proportion the fuel flow between primary and main burner lines.

Option B. To vary pressure pump output in relation to the pressure variation at the intake.

Option C. To decrease the fuel flow to the burners with increased air intake pressure.

Correct Answer is. To vary pressure pump output in relation to the pressure variation at the intake.

Explanation. Barometric Pressure Control is an old name for Altitude (and hence air density) Sensing Unit see Rolls Royce The Jet Engine figure 10-12 or 10-7.

Question Number. 39. During any stabilised running condition, the spill or half ball valve is.

Option A. always varying between fully closed and fully seated.

Option B. lightly seated.

Option C. open fully.

Correct Answer is. lightly seated.

Explanation. Rolls Royce The Jet Engine page 98 refers.

Ouestion Number. 40. The swash plate in a fuel pump, when static is. Option A. at some intermediate position.

Option B. in the minimum position.Option C. in the maximum position.Correct Answer is. in the maximum position.Explanation. Rolls Royce The Jet Engine page 98 refers.

Question Number. 41. A kinetic valve is a device used to control H.P pump output. This is achieved by movement of a.

Option A. diaphragm and half ball valve.

Option B. knife blade.

Option C. needle valve.

Correct Answer is. knife blade.

Explanation. Rolls Royce The Jet Engine page 103 refers.

Question Number. 42. Why is it necessary to control fuel supply to the engine during rapid acceleration?.

Option A. To prevent compressor stall above cruise RPM .

Option B. To control maximum RPM .

Option C. To prevent excessively high EGT and possible compressor surge.

Correct Answer is. To prevent excessively high EGT and possible compressor surge.

Explanation. Rolls Royce The Jet Engine Page 104 refers.

Question Number. 43. Which component corrects for air density effects on fuel/air mixture in a gas turbine engine?.

Option A. The barometric pressure control unit.

Option B. The adjustable throttle valve.

Option C. The pressurising valve.

Correct Answer is. The barometric pressure control unit.

Explanation. Barometric pressure senses density changes.

Question Number. 44. Why is the high pressure fuel pump fitted in a gas turbine engine aircraft?.

Option A. To maintain a vapour free pressure from the aircraft fuel tanks to the LP fuel pump.

Option B. As an emergency in case of failure of the LP pump.

Option C. To provide the majority of the fuel pressure to the engine.

Correct Answer is. To provide the majority of the fuel pressure to the engine.

Question Number. 45. What are the positions of the pressurization valve and the dump valve in a jet engine fuel system when the engine is shut down?.

Option A. Pressurization valve open, dump valve open.

Option B. Pressurization valve closed, dump valve open.

Option C. Pressurization valve closed, dump valve closed.

Correct Answer is. Pressurization valve open, dump valve open.

Explanation. NIL.

Question Number. 46. The density of air is very important when mixing fuel and air to obtain a correct fuel to air ratio. Which of the following weighs the most?.
Option A. 75 parts of dry air and 25 parts of water vapor.
Option B. 100 parts of dry air.
Option C. 50 parts of dry air and 50 parts of water vapor.
Correct Answer is. 100 parts of dry air.
Explanation. NIL.

| Question Num | ber. 47. A mixture ratio of 11:1 normally refers to. | |
|---|--|--|
| Option A. | 1 part air to 11 parts fuel. | |
| Option B. | a stoichiometric mixture. | |
| Option C. | 1 part fuel to 11 parts air. | |
| Correct Answer is. 1 part fuel to 11 parts air. | | |
| Explanation. | NIL. | |

Question Number. 48. For what primary purpose is a turbine engine fuel control unit trimmed?.

Option A. To obtain maximum thrust output when desired.

Option B. To properly position the power levers.

Option C. To adjust the idle RPM .

Correct Answer is. To obtain maximum thrust output when desired.

Explanation. Jeppesen A&P Technician Propulsion Textbook 7-69.

Question Number. 49. Which type of fuel control is used on most of today's turbine engines?.

Option A. Hydromechanical or electronic.

Option B. Mechanical.

Option C. Electronic.

Correct Answer is. Hydromechanical or electronic.

Explanation. Jeppesen A&P Technician Propulsion Textbook 7-60.

Question Number. 50. Under which of the following conditions will the trimming of a turbine engine be most accurate?.

Option A. No wind and low moisture.

Option B. High moisture and low wind.

Option C. High wind and high moisture.

Correct Answer is. No wind and low moisture.

Explanation. NIL.

Question Number.51.An H.M.U receives its signals from.Option A.E.E.C.Option B.ADC.Option C.thrust lever resolvers.Correct Answer is.E.E.C.Explanation.Jeppesen Aircraft Powerplant Page 7-20.

Question Number. 52. In order to stabilize cams, springs, and linkages within the fuel control, manufacturers generally recommend that all final turbine engine trim adjustments be made in the.

Option A. decrease direction.

Option B. increase direction.

Option C. decrease direction after over-adjustment.

Correct Answer is. increase direction.

Explanation. Jeppesen A&P Technician Propulsion Textbook 7-70.

Question Number. 53. When trimming a turbine engine, the fuel control is adjusted to.

Option A. set idle RPM and maximum speed or E.P.R.

Option B. produce as much power as the engine is capable of producing.

Option C. allow the engine to produce maximum RPM without regard to power output.

Correct Answer is. set idle RPM and maximum speed or E.P.R.

Explanation. Jeppesen A&P Technician Propulsion Textbook 7-69.

Question Number. 54. A supervisory electronic engine control (E.E.C) is a system that receives engine operating information and.

Option A. controls engine operation according to ambient temperature, pressure, and humidity.

Option B. adjusts a standard hydromechanical fuel control unit to obtain the most effective engine operation.

Option C. develops the commands to various actuators to control engine parameters. Correct Answer is. adjusts a standard hydromechanical fuel control unit to obtain the most effective engine operation.

Question Number.55.In a FADEC system, active control switchover occurs.Option A.when channels A and B are healthy.Option B.on shutdown.Option C.on engine start up only.

Correct Answer is. on engine start up only. Explanation. Jeppesen Aircraft Powerplant Page 7-20.

Question Number. 56. What causes the fuel divider valve to open in a turbine engine duplex fuel nozzle?.

Option A. An electrically operated solenoid.

Option B. Bleed air after the engine reaches idle RPM .

Option C. Fuel pressure.

Correct Answer is. Fuel pressure.

Explanation. Jeppesen A&P Technician Propulsion Textbook 7-66.

Question Number. 57. The valve on a vane type fuel flow measuring device becomes stuck. What safety backup is available for the engine fuel flow?.

Option A. A differential pressure bypass valve.

Option B. A bypass valve.

Option C. A fuel bleed valve.

Correct Answer is. A differential pressure bypass valve.

Explanation. Pallett Aircraft Instruments and integrated systems page 369 refers. Note the valve opens against spring pressure.

Question Number. 58. What are the principal advantages of the duplex fuel nozzle used in many turbine engines?

Option A. Allows a wider range of fuels and filters to be used.

Option B. Restricts the amount of fuel flow to a level where more efficient and complete burning of the fuel is achieved.

Option C. Provides better atomization and uniform flow pattern.

Correct Answer is. Provides better atomization and uniform flow pattern.

Explanation. Jeppesen A&P Technician Propulsion Textbook 7-66.

Question Number. 59. What is the purpose of the flow divider in a turbine engine duplex fuel nozzle?.

Option A. Allows an alternate flow of fuel if the primary flow clogs or is restricted.

Option B. Provides a flow path for bleed air which aids in the atomization of fuel.

Option C. Creates the primary and secondary fuel supplies.

Correct Answer is. Creates the primary and secondary fuel supplies.

Explanation. Jeppesen A&P Technician Propulsion Textbook 7-66.

Question Number. 60. Which of the following turbine fuel filters has the greatest filtering action?.

Option A. Stacked charcoal.

Option B. Small wire mesh.

Option C. Micron.

Correct Answer is. Micron. Explanation. NIL.

Question Number. 61. Where is the engine fuel shutoff valve usually located?.
Option A. Aft of the firewall.
Option B. Adjacent to the fuel pump.
Option C. Downstream of the engine driven fuel pump.
Correct Answer is. Downstream of the engine driven fuel pump.
Explanation. Jeppesen A&P Technician Propulsion Textbook 7-63.

Question Number.62.Supervisory E.E.C sends its output to the.Option A.fuel valve.Option B.H.M.U/F.F.G.Option C.EGT thermocouple circuit.Correct Answer is.H.M.U/F.F.G.Explanation.RB211-535 has this system - the trim signal is passed to the F.F.G. a FADEC engine

would receive trim signals at the H.M.U.

Question Number. 63. If a FADEC loses its ADC input. In the short term it will.

Option A. go to limit protection mode.

Option B. go into hard reversion.

Option C. go into soft reversion.

Correct Answer is. go into soft reversion.

Explanation. Sometimes known as the Alternate mode. CF-6 FADEC engine has this facility.

Question Number. 64. The primary purpose of an E.E.C is.

Option A. to change analogue inputs into digital format to provide glass cockpit information and reduce flight crew workload.

Option B. to save fuel, reduce crew workload and reduce maintenance costs.

Option C. to change analogue inputs into digital format to reduce flight crew workload and provide maintenance information.

Correct Answer is. to save fuel, reduce crew workload and reduce maintenance costs.

Explanation. Inputs and outputs to the FADEC are both digital and analogue, hence a and b are both wrong. Optimised performance is the reason FADEC was introduced

Question Number. 65. When both FADEC channels are healthy they will alternate.

Option A. as selected on the flight deck.

Option B. when one channel fails.

Option C. on each engine start.

Correct Answer is. on each engine start.

Explanation. Jeppesen Aircraft Powerplant Page 7-20.

| Question Num | ber. | 66. | The purpose of the LP fuel pump is to. |
|---------------|--------|-----------|--|
| Option A. | ensure | the H.P | fuel pump does not cavitate. |
| Option B. | pump f | fuel fror | n the aircraft fuel tanks to the engine. |
| Option C. | ensure | the fuel | flow governor gets enough fuel. |
| Correct Answe | er is. | ensure | the H.P fuel pump does not cavitate. |
| Explanation. | Mainta | ins abo | ut 40 psi to the inlet of the H.P Pump. |

Question Number. 67. In a FADEC system, what is the result of Channel A failing to receive information from a sensor?.

Option A. Channel A will take the information from the backup sensor.

Option B. Channel A will take the information from channel B.

Option C. Channel B will assume control.

Correct Answer is. Channel A will take the information from channel B.

Explanation. This assumes that channel A is still capable of full control and that channel B is receiving a good sensor signal.

Question Number. 68. In a FADEC engine with a hydromechanical fuel system, how is fuel flow controlled?.

Option A. By oil hydraulics.

Option B. By fuel pressure.

Option C. By electro-hydraulic servo valves (E.H.S.Vs).

Correct Answer is. By electro-hydraulic servo valves (E.H.S.Vs).

Explanation. Jeppesen Gas Turbine Powerplants Page 7-20 refers.`

Question Number. 69. On the approach.

Option A. RPM should be above the minimum idle for maximum acceleration.

Option B. RPM should be high.

Option C. RPM should be lower than minimum for maximum acceleration.

Correct Answer is. RPM should be above the minimum idle for maximum acceleration. Explanation. A high (or flight) idle setting is used for maximum acceleration in the event of overshoot.

Question Number. 70. The air data inputs to the FADEC E.C.U fails. The result will be:.

Option A. a lack of flight data.

Option B. the E.C.U reverts to the fail-safe mode.

Option C. uncorrected data from hard wired analogue sensors is utilised.

Correct Answer is. the E.C.U reverts to the fail-safe mode.

Explanation. If all air data input fails then the E.C.U reverts to an alternate (Fail-safe) mode.

| Question Num | ber. 71 | . A FA | DEC system c | onsists of. |
|---------------|-----------|-------------|----------------|-----------------|
| Option A. | H.M.U, A | .D.C and s | sensors. | |
| Option B. | E.E.C, A. | D.C and se | ensors. | |
| Option C. | H.M.U, se | ensors and | an E.E.C. | |
| Correct Answe | er is. H. | M.U, sense | ors and an E.E | .C. |
| Explanation. | Jeppesen | Aircraft Ga | as Turbines Pa | ge 7-62 refers. |

Question Number. 72. A fuel heater prevents.
Option A. entrained water in fuel freezing.
Option B. LP fuel filter icing.
Option C. pipelines freezing.
Correct Answer is. entrained water in fuel freezing.
Explanation. Jeppesen Aircraft Gas Turbine Powerplant Page 7-45 refers. Whilst the LP fuel filter may block as a result of freezing it is the entrained water that froze first.

Question Number. 73. When re-light is required in flight on a FADEC engine, the pilot selects.

Option A. one igniter.

Option B. igniter selected automatically.

Option C. both igniters.

Correct Answer is. igniter selected automatically.

Explanation. The FADEC chooses whichever igniter it wants.

Question Number. 74. The position of fuel heater in fuel system is.

Option A. between the fuel control unit and the burner manifold.

Option B. after the LP fuel filter and before the H.P pump.

Option C. before the LP fuel filter.

Correct Answer is. before the LP fuel filter.

Explanation. This position ensures the fuel will not freeze in the fuel filter. RR The Jet Engine Page 116 Para 100 refers.

Question Number. 75. The E.E.C receives its primary power from.

Option A. 115V AC emergency BUS.

Option B. separate permanent magnet alternator.

Option C. 115V AC main BUS.

Correct Answer is. separate permanent magnet alternator.

Explanation. Jeppesen Aircraft Gas Turbine Powerplant page 7-22 refers. note that answers a and b are back up power supplies.

Question Number. 76. The fuel trimmer on a turbo-prop engine isoperated.
Option A. manually, to prevent high EGT due to altitude increase.
Option B. automatically controlled in conjunction with FCU.
Option C. manually to prevent excessive RPM at high altitude.
Correct Answer is. automatically controlled in conjunction with FCU.
Explanation. No Turbo-prop aircraft has a manual fuel trimmer as far as we are aware. Jeppesen Page 7-12 sub para d further refers.

Question Number.77.The main advantage of FADEC is.Option A.it has electrical control of hydro mechanical unit in all modes.

Option B. efficiency is always maximum.

Option C. it changes T.L.A to most efficient E.P.R rating.

Correct Answer is. efficiency is always maximum.

Explanation. Reduced pilot workload and maximum efficiency of performance is the greatest advantage of F.A.D.E.C.

Question Number. 78. Inlet side of a fuel pump has a.

Option A. threaded micron filter.

Option B. wire mesh filter.

Option C. wire wound filter.

Correct Answer is. wire mesh filter.

Explanation. Jeppesen aircraft gas turbine Powerplants Page 7-48 refers.

Question Number. 79. When a throttle is selected to increase power, the pressure drop across the Fuel Control Unit throttle orifice.

Option A. increases then decreases due to decreasing pump output.

Option B. drops then increases due to increasing pump output.

Option C. remains the same.

Correct Answer is. drops then increases due to increasing pump output.

Explanation. On selection the pressure drop across the throttle decreases then recovers as the pump increases the flow of fuel.

Question Number. 80. When the E.E.C supervisory circuit senses a fault on the engine, the fault annunciator

light will be on and the E.E.C will.

Option A. remove fuel, down trimming signal only when E.E.C switch selected off.

Option B. remove fuel, down trimming signal immediately.

Option C. remove fuel, down trimming signal only after landing.

Correct Answer is. remove fuel, down trimming signal immediately. Explanation. The E.E.C referred to here is that discussed in Rolls Royce the Jet Engine page 112. It is fitted to an RB211-535E4.

Question Number.81.In-Flight the engine E.E.C controls.Option A.EGT.Option B.throttle position.Option C.fuel flow.Correct Answer is.fuel flow.Explanation.Throttle position is controlled by the crew or auto throttle. EGT is a function of fuel flow.

Question Number. 82. A FADEC does not have which of the following?.
Option A. Control of thrust reverser operation.
Option B. An automatic starting capability.
Option C. Automatic control of engine fire bottles.
Correct Answer is. Automatic control of engine fire bottles.
Explanation. Fire extinguishers are always operated from the flight deck.

Question Number. 83. A FADEC consists of.

Option A. Electronic controls, sensors and an H.M.U.

Option B. Electronic control and throttle position transmitter.

Option C. Electronic control only.

Correct Answer is. Electronic controls, sensors and an H.M.U.

Explanation. A FADEC is the full system of sensors and control unit. Sometimes the Hydro mechanical Unit (H.M.U) is also included as part of the system.

Question Number. 84. During aerobatic manoeuvres, what prevents fuel from spilling out of fuel tank vents?.

Option A. Booster pump differential pressure.

Option B. Baffle plates in tanks.

Option C. Float operated valves.

Correct Answer is. Float operated valves.

Explanation. Float operated valves allow the vent lines to vent both ways if there is no fuel on the float, but will `shut when the float is lifted by fuel.

Question Number. 85. After a bag tank replacement, where would you disconnect the system to carry out the flow checks?.

Option A. At the engine.

Option B. At tank outlet.

Option C. Tank isolation cock.

Correct Answer is. At the engine.

Explanation. CAIPs AL/3-17 states that for any aircraft fuel flow test after major system interruption connect the flow rig at the engine bulkhead.

Question Number. 86. What is the purpose of a silver strip on a fuel filter?. Option A. To detect excess metal.

Option B. To detect sulphur in fuel.

Option C. To strain oil for contamination.

Correct Answer is. To detect sulphur in fuel.

Explanation. Rolls Royce The Jet Engine Page 254 refers.

Question Number. 87. The basic concept of an H.P fuel control is.
Option A. automatic adjustment of the fuel control unit by preventing excess fuel reaching the burners.
Option B. the bleeding of excess fuel back to the input of the H.P pump swash plate piston.
Option C. constant adjustment of the swash plate angle of the H.P fuel pump.
Correct Answer is. constant adjustment of the swash plate angle of the H.P fuel pump.
Explanation. Rolls Royce the Jet Engine Pages 98 - 102 refer.

Question Number. 88. To prevent compressor surge and overheating of the combustion chamber due to over fuelling.

Option A. a barometric unit is fitted.

Option B. a throttle unit is fitted.

Option C. an acceleration control unit is fitted.

Correct Answer is. an acceleration control unit is fitted.

Explanation. The acceleration unit automatically limits the rate of increase of fuel flow until sufficient air is passing through the engine.

Question Number. 89. When FADEC is in normal mode.

Option A. channel A or B will be in command.

Option B. channel A will be in command.

Option C. channel B will be in command.

Correct Answer is. channel A or B will be in command.

Explanation. Both channels are operating but either one can be in control if they are both healthy. Question Number. 90. Out of the following thrust lever resolver angles, which one is the forward idle setting?.

Option A. 5 degrees.

Option B. 85 degrees.

Option C. 40 degrees.

Correct Answer is. 40 degrees.

Explanation. All FADEC engines will have reverse thrust settings therefore the T.L.A of 0 degrees will be max reverse, and 85 will be max forward therefore 40 is the idle figureure.

Question Number. 91. Trimming is a term applied to adjusting the.
Option A. idle speed and maximum thrust.
Option B. fuel specific gravity.
Option C. part trim stop.
Correct Answer is. idle speed and maximum thrust.
Explanation. Dale Crane Dictionary of Aeronautical Terms 3rd edition Refers.

Question Number. 92. Fuel boost pumps are cooled using.
Option A. ram air.
Option B. Fuel pumps do not require cooling.
Option C. fuel.
Correct Answer is. fuel.
Explanation. Fuel pumps, of any type usually use the fuel they are pumping to cool the bearings.

Question Number. 93. A fuel trimmer unit is adjusted at altitude.

Option A. automatically, via a fuel trim unit.

Option B. manually to compensate for propeller torque.

Option C. manually to compensate for EGT change.

Correct Answer is. automatically, via a fuel trim unit.

Explanation. We assume here that the fuel trim at altitude is due to decreasing air density& pressure. The Fuel flow governor (fuel trimmer) does this automatically.

Question Number. 94. Baffles in a rigid fuel tank.

Option A. help prevent micro-biological corrosion.

Option B. strengthen the tank structure.

Option C. prevent surge.

Correct Answer is. prevent surge.

Explanation. This question was definitely asked in module 15- it should be in module 11!!.

Question Number. 95. In a FADEC system, what does the E.E.C measure along with RPM ?.

Option A. Pressure and Temperature.

Option B. Pressure.

Option C. Temperature.

Correct Answer is. Pressure and Temperature.

Explanation. Normally the E.E.C reads as a minimum To Po Ps3 and T25.

Question Number. 96. In a FADEC system, how are the power supply windings for channel A and Channel B wound?.

Option A. Two independent generators.

Option B. On one generator with 2 separate windings.

Option C. One generator and one winding.

Correct Answer is. On one generator with 2 separate windings.

Explanation. The engine alternator is a permanent magnet alternator with 2 windings within the stator housing. There may also be a third winding that is used to indicate H.P RPM (H.P tachometer) within the same housing.

Question Number.97.If an Engine FADEC system loses air-data permanently, the pilotwill.Option A.turn that E.E.C Off.Option B.select alternate pitot static.Option C.switch to Alt on the relevant E.E.C.Correct Answer is.switch to Alt on the relevant E.E.C.Explanation.By switching to Alternate mode manually the E.E.C uses cornerstone Pamb and Tamb.

Question Number. 98. A FADEC system takes measurements from Engine Speed,.

Option A. Temperature and Pressure.

Option B. and Temperature.

Option C. and Pressure.

Correct Answer is. Temperature and Pressure.

Explanation. T-ambient, P-ambient and P s3 as a minimum.

Question Number. 99. Main purpose of the fuel boost pumps is to provide.

Option A. emergency dump jettison.

Option B. cross-feed fuel from one tank to another.

Option C. fuel pressure to both engine pumps.

Correct Answer is. fuel pressure to both engine pumps.

Explanation. Supply of fuel to the engines is the primary purpose although the other two answers may also be options.

Question Number. 100. The swash plate in the fuel pump of an axial flow gas turbine engine is controlled by.

Option A. servo hydraulic pressure.

Option B. electrical servo control.

Option C. servo fuel pressure.

Correct Answer is. servo fuel pressure. Explanation. Rolls Royce the Jet Engine Page 99 et al refers.

Question Number. 101. The end fittings on a fuel non-return valve are normally of different sizes to.

Option A. prevent incorrect installation.

Option B. facilitate bleeding the system.

Option C. allow a full fuel flow through the valve.

Correct Answer is. prevent incorrect installation.

Explanation. Also known as check valves, NRV's have different end fittings and sometimes an arrow showing direction of flow embossed on the casing.

Question Number. 102. E.E.C receives signals from RPM sensor and.

Option A. pressure sensors.

Option B. pressure and temperature sensors.

Option C. temperature sensors.

Correct Answer is. pressure and temperature sensors.

Explanation. Modern FADEC systems receive all three types of sensor but quite often do not use the EGT signals for control.

Question Number. 103. When does E.E.C channel change over occur?.

Option A. On engine start up.

Option B. On engine shut down.

Option C. On fault.

Correct Answer is. On engine start up.

Explanation. The E.E.C prepares for the changeover by resetting the E.E.C on shut down, but does not actually do it until the next start. A simple single fault (compared to a complete channel failure) will not cause a change over.

Question Number. 104. The possible combined output from all the scavenge pumps in a lubrication system will be.

Option A. greater than the pressure pump output.

Option B. less than the pressure pump output.

Option C. the same as the pressure pump output.

Correct Answer is. greater than the pressure pump output.

Explanation. NIL.

Question Number. 105. If the knife-edge blade in a kinetic valve is fully in.

- Option A. pump pressure is constant.
- Option B. servo pressure is being bled off.
- Option C. servo pressure is increasing.

Correct Answer is. servo pressure is being bled off. Explanation. Rolls Royce The Jet Engine page 103 para 31 figure 10-8.

15.12 Air Systems.

Question Number.1.Engine anti-ice is taken from the.Option A.turbine.Option B.H.P compressor.Option C.LP compressor.Correct Answer is.H.P compressor.Explanation.Jepperson Gas Turbine Powerplants Page 9-2 refers.

Question Number.2.In an axial flow turbine engine, compressor bleed air is sometimesused to aid in cooling the.Option A.inlet guide vanes.Option B.turbine, vanes, blades, and bearings.Option C.fuel.Correct Answer is.turbine, vanes, blades, and bearings.Explanation.NIL.

Question Number. 3. If air is taken from the compressor for air conditioning or anti-icing.

| Option A. | thrust will increase EGT will increase. |
|---------------|---|
| Option B. | thrust will decrease EGT will increase. |
| Option C. | thrust will decrease EGT will decrease. |
| Correct Answe | er is. thrust will decrease EGT will increase. |
| Explanation. | Air is taken from the H.P compressor hence there is less mass flow. |

Question Number.4.Turbine case cooling utilizes.Option A.LP compressor air.Option B.fan air.Option C.H.P compressor air.Correct Answer is.fan air.Explanation.Fan air is the coldest in the engine.

Question Number.5.Air for anti-icing is taken from the.Option A.accessory Gearbox.Option B.LP compressor.Option C.H.P compressor.Correct Answer is.H.P compressor.Explanation.LP air would not be hot enough.

Question Number.6.As air is bled off the engine, EGT will.Option A.remain constant.Option B.decrease.Option C.increase.Correct Answer is.increase.Explanation.Less air, but same fuel equals higher EGT.

Question Number. 7. The heat absorbed by internal components can be detrimental to thrust and is prevented by.

Option A. reducing fuel flow to reduce internal temperature.

Option B. bleeding air off the compressor to heat the components.

Option C. bleeding air off the compressor to cool the components.

Correct Answer is. bleeding air off the compressor to cool the components.

Explanation. Jeppesen Aircraft Gas Turbine Powerplant Page 4-53 refers.

Question Number. 8. On a gas turbine engine, thermal wing de-icing system derives air.

Option A. via air from the H.P turbine.

Option B. through a pressure regulating shut-off valve (P.R.S.O.V).

Option C. through a pressure relief system.

Correct Answer is. through a pressure regulating shut-off valve (P.R.S.O.V).

Explanation. Rolls Royce The Jet Engine Page 150 Refers.

Question Number. 9. Inlet for cooling air for the first stage turbine blades is fed via the.

Option A. blade root.

Option B. grill holes.

Option C. leading edge of the blade.

Correct Answer is. blade root.

Explanation. The cooling air is ducted through the turbine disc to the blade root then out into the airstream through holes in the leading and trailing edges.

Question Number. 10. Air bleed for an anti-ice system is.

Option A. tapped directly off the compressor.

Option B. sent through a pressure regulator.

Option C. sent through the air conditioning.

Correct Answer is. tapped directly off the compressor.

Explanation. With this method if the engine is running then anti-ice air is always available.

- Question Number. 11. With bleed valves open for anti-ice.
- Option A. thrust is unaffected.
- Option B. thrust decreases, fuel consumption decreases.
- Option C. thrust decreases, fuel consumption increases.
- Correct Answer is. thrust decreases, fuel consumption decreases.

15.13, Starting and Ignition Systems.

Question Number.1.In the H.E.I.U. the discharge resistors.Option A.allows the capacitors to discharge when the unit is switched off.Option B.allows sufficient voltage to be stored to provide relight facilities up to 55,000 ft.Option C.protects the unit from excessive voltages.Correct Answer is.allows the capacitors to discharge when the unit is switched off.Explanation.NIL.

Question Number.2.In the H.E.I.U. the choke.Option A.prolongs the life of the plug.Option B.protects the unit from excessive high voltages.Option C.prolongs the discharge.Correct Answer is.prolongs the discharge.Explanation.NIL.

Question Number.3.In an electrical starting system, the slow start resistor is shortcircuited by the.Option A.centrifugal Switch.Option B.time switch.Option C.overspeed switch.Correct Answer is.centrifugal Switch.Explanation.NIL.

Question Number. 4. The advantage of an air starter system is.

Option A. it provides a more rapid start.

Option B. it is light, simple and economical.

Option C. there is no risk of engine fire during starting.

Correct Answer is. it is light, simple and economical.

Explanation. Jeppesen A&P Technician Powerplant Book Page 8-49 'Air starters weigh about one-fifth the wieght of a comparable electric starter. This gives air turbine starters a high power-to-wieght ratio. because of this, pneumatic starters are used almost exclusively on commercial jet aircraft.

Question Number. 5. An advantage of a gas turbine starter is.
Option A. it provide high power for low weight.
Option B. it does not require external connections.
Option C. it uses a low volatile fuel.
Correct Answer is. it provide high power for low weight.
Explanation. NIL.

Question Number. 6. If the engine fails to light-up, the starter cycle is canceled by.

Option A.a centrifugal switch.Option B.a low pressure relay.Option C.a time switch.Correct Answer is.a time switch.Explanation.NIL.

Question Number.7.For starting the engine, the H.P cock should be initially.Option A.in a position which depends on the fuel system.Option B.open.Option C.closed.Correct Answer is.closed.Explanation.NIL.

Question Number.8.On light up, the gas temperature will.Option A.rise slowly.Option B.rise rapidly, then fall as RPM increases to idle.Option C.rise rapidly.Correct Answer is.rise rapidly, then fall as RPM increases to idle.Explanation.NIL.

Question Number.9.Self sustaining RPM means that.Option A.The engine can accelerate to full power in under 5 seconds.Option B.There is sufficient power for ground maneuvering.Option C.The engine will run independently of external help.Correct Answer is.The engine will run independently of external help.Explanation.NIL.

Question Number. 10. A 'hot start' with excessive temperatures may be caused by. Option A. wrong grade of fuel.

Option B. throttle partly open. Option C. high electrical power supply. Correct Answer is. throttle partly open. Question Number. 11. A dry motoring cycle would be required to. Option A. clear the engine after a wet start. Option B. check engine run down time. Option C. check the operation of the igniters. Correct Answer is. clear the engine after a wet start. Explanation. NIL.

Question Number.12.What type of turbine blade is most commonly used in air starter
motors?.Option A.Reaction.Option B.Impulse.Option C.Impulse-reaction.Correct Answer is.Impulse.Explanation.NIL.

Question Number.13.Ignitor plugs are cleaned by.Option A.compressed air and brushing lightly with soft brush.Option B.light sand blasting.Option C.steel wool.Correct Answer is.compressed air and brushing lightly with soft brush.Explanation.Jepperson Gas Turbine Powerplants Page 11-11 refers.

Question Number.14.An H.E.I.U works by.Option A.a discharging capacitor.Option B.ac busbar.Option C.a contact breaker.Correct Answer is.a discharging capacitor.Explanation.Jepperson Gas Turbine Powerplants Page 11-5 refers.

Question Number. 15. When is ignition used?.

Option A. For relight and start up.

Option B. For continuous relight.

Option C. At high altitudes.

Correct Answer is. For relight and start up.

Explanation. Rolls Royce The Jet Engine Page 127 Refers.

Question Number.16.An ignitor plug for a large gas turbine takes the form of a.Option A.glow' plug.

Option B. sparking plug. Option C. surface discharge plug. Correct Answer is. surface discharge plug. Question Number. 17. The spark in the High Energy igniter is supplied by. Option A. a capacitor. Option B. a contact circuit breaker. Option C. the AC busbar. Correct Answer is. a capacitor. Explanation. Jeppesen Gas Turbine Powerplant Page11-4 refers.

Question Number. 18. Self sustaining speed is.
Option A. V1 speed.
Option B. the RPM at which the engine continues without external assistance.
Option C. take off velocity.
Correct Answer is. the RPM at which the engine continues without external assistance.
Explanation. After the starter has cut out and the RPM and TGT have stabilised.

Question Number.19.During normal running conditions.Option A.combustion is intermittently supported by ignition.Option B.combustion is self supportingOption C.combustion is continuously supported by ignition.Correct Answer is.combustion is self supportingExplanation.Rolls Royce The Jet Engine page 37 refers.

Question Number. 20. High energy ignition is required because of the.

Option A. high flash point of the fuel.

Option B. absorbed moisture content.

Option C. low flash point of the fuel.

Correct Answer is. high flash point of the fuel.

Explanation. Jeppesen Gas Turbine Powerplants Page 7-1 refers.

Question Number. 21. In the H.E.I.U. the discharge resistors.
Option A. allow sufficient voltage to be stored to provide relight facilities up to 55,000 ft.
Option B. allow the capacitors to discharge when the unit is switched off.
Option C. protect the unit from excessive voltages.
Correct Answer is. allow the capacitors to discharge when the unit is switched off.
Explanation. Rolls Royce The Jet Engine page 129 refers

Question Number.22.The rate of discharge of a H.E.I.U. is.Option A.4 discharges per revolution.Option B.60 - 100 per second.Option C.60 - 100 per minute.

Correct Answer is. 60 - 100 per minute. Explanation. NIL.

Question Number. 23. Why do turbine engine ignition systems require high energy?.

Option A. Because the applied voltage is much greater.
Option B. To ignite the fuel under conditions of high altitude and high temperatures.
Option C. To ignite the fuel under conditions of high altitude and low temperatures.
Correct Answer is. To ignite the fuel under conditions of high altitude and low temperatures.
Explanation. Jeppesen A&P Technician Propulsion Textbook 8-102.

Question Number. 24. The type of ignition system used on most turbine aircraft engines is.

Option A.low tension.Option B.capacitor discharge.Option C.high resistance.Correct Answer is.capacitor discharge.Explanation.Jeppesen A&P Technician Propulsion Textbook 8-102.

Question Number. 25. A safety feature usually employed in pneumatic starters that is used to prevent the starter from reaching burst speed if inlet air does not terminate on schedule is the.

Option A. stator nozzle design that chokes airflow and stabilizes turbine wheel speed.

Option B. drive shaft shear point.

Option C. spring coupling release.

Correct Answer is. stator nozzle design that chokes airflow and stabilizes turbine wheel speed.

Explanation. Jeppesen A&P Technician Propulsion Textbook 8-49.

Question Number. 26. A safety feature usually employed in pneumatic starters that is used if the clutch does not release from the engine drive at the proper time during start is the.

Option A. spring coupling release.

Option B. drive shaft shear point.

Option C. flyweight cutout switch.

Correct Answer is. flyweight cutout switch.

Explanation. Jeppesen A&P Technician Propulsion Textbook 8-49.

Question Number. 27. Airflow to the pneumatic starter from a ground unit is normally prevented from causing starter overspeed during engine start by.

Option A. a preset timed cutoff of the airflow at the source.

Option B. stator nozzle design that chokes airflow and stabilizes turbine wheel speed speed.

Option C. activation of a flyweight cutout switch.

Correct Answer is. activation of a flyweight cutout switch.

Explanation. Jeppesen A&P Technician Propulsion Textbook 8-49.

Question Number. 28. Air turbine starters are generally designed so that reduction gear distress or damage may be detected by.

Option A. inspection of a magnetic chip detector.

Option B. characteristic sounds from the starter assembly during engine start.

Option C. breakage of a shear section on the starter drive shaft.

Correct Answer is. inspection of a magnetic chip detector.

Explanation. Jeppesen A&P Technician Propulsion Textbook 8-51.

Question Number. 29. Inspection of pneumatic starters by maintenance technicians usually includes checking the.

Option A. stator and rotor blades for FOD.

Option B. oil level and magnetic drain plug condition.

Option C. rotor alignment.

Correct Answer is. oil level and magnetic drain plug condition.

Explanation. Jeppesen A&P Technician Propulsion Textbook 8-51.

Question Number. 30. Pneumatic starters are usually designed with what types of airflow impingement systems?.

Option A. Radial inward flow turbine and axial-flow turbine.

Option B. Centrifugal compressor and axial-flow compressor.

Option C. Double entry centrifugal outward flow and axial-flow turbines.

Correct Answer is. Radial inward flow turbine and axial-flow turbine.

Explanation. Jeppesen A&P Technician Propulsion Textbook 8-49.

Question Number. 31. A clicking sound heard at engine coast-down in a pneumatic starter incorporating a sprag clutch ratchet assembly is an indication of.

Option A. gear tooth and/or pawl damage.

Option B. one or more broken pawl springs.

Option C. the pawls re-contacting and riding on the ratchet gear.

Correct Answer is. the pawls re-contacting and riding on the ratchet gear.

Explanation. Jeppesen A&P Technician Propulsion Textbook 8-50.

Question Number. 32. The primary advantage of pneumatic (air turbine) starters over comparable electric starters for turbine engines is.

Option A. high power-to-weight ratio.

Option B. reduction gearing not required.

Option C. a decreased fire hazard.

Correct Answer is. high power-to-weight ratio.

Explanation. NIL.
Question Number. 33. The purpose of an under current relay in a starter-generator system is to.

Option A. keep current flow to the starter-generator under the circuit capacity maximum.

Option B. disconnect power from the starter-generator and ignition when sufficient engine speed is reached.

Option C. provide a backup for the starter relay.

Correct Answer is. disconnect power from the starter-generator and ignition when sufficient engine speed is reached.

Explanation. Jeppesen A&P Technician Propulsion Textbook 8-46.

Question Number. 34. How does the ignition system of a gas turbine engine differ from that of a reciprocating engine?.

Option A. Magneto to engine timing is not critical.

Option B. One igniter plug is used in each combustion chamber.

Option C. A high energy spark is required for ignition.

Correct Answer is. A high energy spark is required for ignition.

Explanation. Jeppesen A&P Technician Propulsion Textbook 8-102.

Question Number. 35. In a gas turbine engine D.C capacitor discharge ignition system, where are the high voltage pulses formed?.

Option A. At the rectifier.

Option B. At the triggering transformer.

Option C. At the breaker.

Correct Answer is. At the triggering transformer.

Explanation. Jeppesen A&P Technician Propulsion Textbook 8-103.

Question Number. 36. Igniter plugs used in turbine engines are subjected to high intensity spark discharges and yet they have a long service life because they.

Option A. operate at much lower temperatures.

Option B. are not placed directly into the combustion chamber.

Option C. do not require continuous operation.

Correct Answer is. do not require continuous operation.

Explanation. Jeppesen A&P Technician Propulsion Textbook 8-105.

Question Number. 37. Great caution should be exercised in handling damaged hermetically sealed turbine engine igniter transformer units because.

Option A. some contain toxic chemicals.

Option B. some contain radioactive material.

Option C. compounds in the unit may become a fire or explosion hazard when exposed to the air.

Correct Answer is. some contain radioactive material.

Explanation. Jeppesen A&P Technician Propulsion Textbook 8-106.

Question Number. 38. Generally, when removing a turbine engine igniter plug, in order to eliminate the possibility of the technician receiving a lethal shock, the ignition switch is turned off and.

Option A. disconnected from the power supply circuit.

Option B. the transformer exciter input lead is disconnected and the center electrode grounded to the engine after disconnecting the igniter lead from the plug and waiting the prescribed time. Option C. the igniter lead is disconnected from the plug and the center electrode grounded to the engine after disconnecting the transformer-exciter input lead and waiting the prescribed time.

Correct Answer is. the igniter lead is disconnected from the plug and the center electrode grounded to the engine after disconnecting the transformer-exciter input lead and waiting the prescribed time.

Explanation. NIL.

Question Number. 39. What is the first engine instrument indication of a successful start of a turbine engine?.

Option A. A rise in the engine fuel flow.

Option B. A rise in oil pressure.

Option C. A rise in the exhaust gas temperature.

Correct Answer is. A rise in the exhaust gas temperature.

Explanation. NIL.

Question Number. 40. H.E.I.U ignitor plugs receive their electrical supply from.

Option A. discharge inductor.

Option B. starter system electrical circuit.

Option C. discharge capacitor.

Correct Answer is. discharge capacitor.

Explanation. Rolls Royce The Jet Engine Page 129.

Question Number.41.An H.E.I.U is rated in.Option A.Joules.Option B.Watts.Option C.Amps.Correct Answer is.Joules.Explanation.Jeppesen Aircraft Gas Turbines Powerplant Page 11-5 to 11-7 refers.

Question Number. 42. A glow plug operates.

Option A. manually.
Option B. by heat action.
Option C. electrically.
Correct Answer is. by heat action.
Explanation. The extreme heat of the plug ignites the fuel. It is powered by electricity. See Jeppesen Aircraft Gas Turbines page 11-9.

Question Number.43.The resistor in a D.C. starter motor.Option A.prevents over speed.Option B.prevents current surge when motor is at low rpm.Option C.used when D.C. motor fails.Correct Answer is.prevents current surge when motor is at low rpm.Explanation.Rolls Royce The Jet Engine page 122 refers.

Question Number. 44. Where does the high voltage type turbine ignition receive its voltage pulse from?.

Option A. Primary windings.

Option B. Rectifier.

Option C. Trigger transformer.

Correct Answer is. Primary windings.

Explanation. Rolls Royce the jet engine Fig 11-12 shows an AC system. this uses a transformer to generate the high voltage at the discharge gap.

Question Number. 45. On a gas turbine engine DC starting circuit, if there is an open circuit on the contact of the over speed relay.

Option A. starter motor will stop only when starter switch selected off.

Option B. starter motor will continue to run for 30 sec and then stop.

Option C. no power supply is connected to the starter motor.

Correct Answer is. no power supply is connected to the starter motor.

Explanation. Refer Fig 11-3 Rolls Royce The Jet engine. The main relay cannot close if the overspeed relay is open.

Question Number. 46. The field of the D.C. starter motor used on gas turbine engine is.

Option A. series only.

Option B. shunt or compound.

Option C. series or compound.

Correct Answer is. series or compound.

Explanation. Aircraft electrical systems E.H.J Pallett 3rd edition page 154 refers.

Question Number. 47. When 'blow out' is selected on the Gas Turbine Engine starting circuit.

Option A. the starter motor is stopped when starter switch selected off or when the timer switch cuts out.

Option B. the over-speed relay will de-energise the starter circuit.

Option C. ignition is continuously on.

Correct Answer is. the starter motor is stopped when starter switch selected off or when the timer switch cuts out.

Explanation. Refer Fig 11-3 Rolls Royce The Jet Engine. The blow out circuit is used to blow out any jet pipe fire. In this mode there is no ignition or fuel hence the starter cannot overspeed.

Question Number. 48. After an unsuccessful start of an engine.

Option A. the engine has to be left for some time before another start.

Option B. unburnt fuel can be drained from fuel drainage lines.

Option C. unburnt fuel can be evacuated by motoring the engine with H.P cock closed.

Correct Answer is. unburnt fuel can be evacuated by motoring the engine with H.P cock closed.

Explanation. On normal shutdowns combustors and fuel manifolds are drained through the drain manifold. After an unsuccessful start there will be fuel throughout the hot section. Hence a dry run is needed to purge the engine.

Question Number. 49. A glow plug may be used in place of a spark plug on.

Option A. low temperature engines.

Option B. large engines.

Option C. small engines.

Correct Answer is. small engines.

Explanation. Jeppesen Aircraft Gas Turbine Powerplants Page 11-9 refers to the PW PT6 as an example of a smaller engine.

Question Number. 50. When an engine being started by an air starter reaches self sustaining speed.

Option A. the motor is disconnected by the flyweight cut out switch.

Option B. the starter valve is disconnected by the fly weight cut-out switch in the air starter.

Option C. the motor is disconnected by the pilot.

Correct Answer is. the starter valve is disconnected by the fly weight cut-out switch in the air starter.

Explanation. Jeppesen Aircraft Gas Turbine Powerplants Page 10-9 refers.

Question Number.51.When reconnecting a H.E.I.U , which cable must be reconnectedfirst?.Option A.It makes no difference.Option B.L.T before H.T.Option C.H.T before L.T.Correct Answer is.H.T before L.T.Explanation.This is the reverse of disconnecting, when L.T is isolated and then disconnectedfirst.

Question Number. 52. An aircraft flying through heavy rain may use, as a precaution.

Option A. airframe deicing.

Option B. engine intake deicing.

Option C. continuous ignition.

Correct Answer is. continuous ignition.

Explanation. Continuous ignition is used in case of flame out caused by the inclement weather.

Question Number. 53. The starter light is on during a start cycle (low voltage electrical starter).

Option A. Indicates electrical power is flowing to the starter.

Option B. If the light stays on after 30 seconds action is required.

Option C. This is normal for 30 seconds, take no action.

Correct Answer is. If the light stays on after 30 seconds action is required.

Explanation. See the Rolls Royce Jet engine low voltage starter system on page 123. The indicator light indicates power to the igniter. The Full current time switch cuts out the circuit after a period of time.

Question Number. 54. A D.C starter motor disconnects due to.

Option A. current decreasing switching off an overspeed relay.

Option B. current increasing switching off an overspeed relay.

Option C. a centrifugal switch that acts like an overspeed relay.

Correct Answer is. current decreasing switching off an overspeed relay.

Explanation. Same starter circuit reference as above. As the starter accelerates drawn current reduces and causes the overspeed relay to drop out.

Question Number.55.What is the purpose of the current limiting resistor in a startercircuit?.Option A.To prevent the starter from over speeding in the final phase of starting.Option B.To provide overall control of the the speed of the starter.Option C.To prevent an initial current surge.

Correct Answer is. To prevent an initial current surge.

Explanation. The starter motor is protected from excessive current until the timer shorts out the resistor. See RR the jet engine page 123.

Question Number. 56. On a low energy dual ignition system (<3 joules), if a relight is necessary.

Option A. it occurs automatically.

Option B. the pilot selects both ignitors.

Option C. the pilot selects one of the two ignitors.

Correct Answer is. the pilot selects both ignitors.

Explanation. Normal low/high systems have a choice of low or high energy ignition with high being used for relight. In these systems the pilot can choose 1, 2 or both.

15.14, Engine Indication Systems.

Question Number.1.The compensation device on an E.G.T system must be re-calibrated
after.Option A.each time a part of the system is replaced.Option B.does not need calibration.Option C.manufacture and overhaul.Correct Answer is.does not need calibration.Explanation.The compensation device is an automatic device Page 140 Rolls Royce book refers.

Question Number. 2. When testing an E.G.T system.

Option A. the O.A.T is always taken into consideration.

Option B. the O.A.T is neglected.

Option C. O.A.T is only taken into consideration when over20°C.

Correct Answer is. the O.A.T is always taken into consideration.

Explanation. To test the system the test set has to trimmed for ambient temperature, as the system when in operation is adjusted for ambient temperature by the compensating resistor. This is clearly stated in the B 737 AMM.

Question Number. 3. What is the Engine Pressure Ratio (E.P.R.) used for?.

Option A. To limit the maximum exhaust gas temperature.

Option B. To indicate the thrust produced by the engine.

Option C. As a cross check for minimum acceptable thrust.

Correct Answer is. To indicate the thrust produced by the engine.

Explanation. NIL.

Question Number. 4. What happens when bulb type thermometer resistive element goes open circuit?.

Option A. Reads less than ambient.

Option B. No reading given.

Option C. Reads more than ambient.

Correct Answer is. Reads more than ambient.

Explanation. NIL.

Question Number. 5. On an E.G.T thermocouple system, the hot junction.

Option A. is placed up stream of the combustion chamber.

Option B. is placed in cockpit.

Option C. is placed downstream of the combustion chamber.

Correct Answer is. is placed downstream of the combustion chamber.

Explanation. NIL.

Question Number. 6. On an RPM system using a synchronous generator, the pointer is deflected by.

Option A. a potentiometer.

Option B. a Wheatstone bridge.

Option C. an AC servomotor.

Correct Answer is. an AC servomotor.

Explanation. Jepperson Gas Turbine Powerplants Page 12-13 refers.

Question Number. 7. Torque pressure is usually read from a.

Option A. torque meter.

Option B. direct reading pressure gauge.

Option C. tension gauge.

Correct Answer is. direct reading pressure gauge.

Explanation. Jepperson Gas Turbine Powerplants Page12-21 refers.

Question Number. 8. The drag cup in a tacho-generator is balanced by.

Option A. calibrated hairspring.

Option B. adjustable counterbalance weights.

Option C. adjustment screw.

Correct Answer is. calibrated hairspring.

Explanation. Jepperson Gas Turbine Powerplants Page 12-14 refers.

Question Number. 9. Fuel flow indication is taken from.

Option A. after the H.P pump.

Option B. after either H.P Pump or LP Pump.

Option C. after the LP pump.

Correct Answer is. after either H.P Pump or LP Pump.

Explanation. Vane type flowmeters are usually in the LP Supply. Integrated flowmeters in the H.P supply.

Question Number.10.What power is required for E.G.T gauge indication?.Option A.No power - it is self generating.Option B.115V AC.Option C.28V DC.Correct Answer is.No power - it is self generating.

Explanation. Jeppesen Gas Turbine Powerplants Page 12-5 Refers.

Question Number.11.A Bourdon tube instrument may be used to indicate.Option A.position and quantity.Option B.pressure and temperature.Option C.pressure, temperature, position and quantity.Correct Answer is.pressure and temperature.

Explanation. NIL.

Question Number. 12. What instrument on a gas turbine engine should be monitored to minimize the possibility of a 'hot' start?.

Option A. RPM indicator.

Option B. Turbine inlet temperature.

Option C. Torquemeter.

Correct Answer is. Turbine inlet temperature.

Explanation. Jeppesen A&P Powerplant Textbook 4-5.

Question Number.13.oil temperature thermocouples are usually constructed of.Option A.iron constantan.Option B.alumel constantan.Option C.chromel alumel.Correct Answer is.iron constantan.Explanation.NIL.

Question Number.14.The RPM indication of a synchronous AC motor tachometer is
governed by the generator.Option A.current.Option B.frequency.Option C.voltage.Correct Answer is.frequency.Explanation.NIL.

Question Number. 15. Instruments that measure relatively high fluid pressures, such as oil pressure gauges, are usually what type?.
Option A. Bourdon tube.
Option B. Vane with calibrated spring.
Option C. Diaphragm or bellows.
Correct Answer is. Bourdon tube.
Explanation. NIL.

Question Number. 16. Instruments that provide readings of low or negative pressure, such as manifold pressure gauges, are usually what type?.
Option A. Diaphragm or bellows.
Option B. Vane with calibrated spring.
Option C. Bourdon tube.
Correct Answer is. Diaphragm or bellows.
Explanation. NIL.

Question Number. 17. In what units are gas turbine engine tachometers calibrated?.

Option A. Percent of engine pressure ratio.

Option B. Percent of engine RPM.

Option C. Actual engine RPM.

Correct Answer is. Percent of engine RPM.

Explanation. Jeppesen A&P Powerplant Textbook 4-2.

Question Number. 18. In a turbine engine, where is the turbine discharge pressure indicator sensor located?.

Option A. At a location in the exhaust cone that is determined to be subjected to the highest pressures.

Option B. Immediately aft of the last turbine stage.

Option C. At the aft end of the compressor section.

Correct Answer is. Immediately aft of the last turbine stage.

Explanation. NIL.

Question Number. 19. The exhaust gas temperature (E.G.T) indicator on a gas turbine engine provides a relative indication of the.

Option A. turbine inlet temperature.

Option B. temperature of the exhaust gases as they pass the exhaust cone.

Option C. exhaust temperature.

Correct Answer is. turbine inlet temperature.

Explanation. Jeppesen A&P Powerplant Textbook 4-5.

Question Number. 20. Engine pressure ratio is determined by.

Option A. dividing engine inlet total pressure by turbine outlet total pressure.

Option B. multiplying engine inlet total pressure by turbine outlet total pressure.

Option C. dividing turbine outlet total pressure by engine inlet total pressure.

Correct Answer is. dividing turbine outlet total pressure by engine inlet total pressure. Explanation. NIL.

Question Number. 21. A red triangle, dot, or diamond mark on an engine instrument face or glass indicates.

Option A. the maximum limit for high transients such as starting.

Option B. a restricted operating range.

Option C. the maximum operating limit for all normal operations.

Correct Answer is. the maximum limit for high transients such as starting.

Explanation. Jeppesen A&P Powerplant Textbook 4-5.

Question Number. 22. What is the primary purpose of the tachometer on an axial compressor turbine engine?.

Option A. Monitor engine RPM during cruise conditions.

Option B. Monitor engine RPM during starting and to indicate overspeed conditions.

Option C. It is the most accurate instrument for establishing thrust settings under all conditions.

Correct Answer is. Monitor engine RPM during starting and to indicate overspeed conditions. Explanation. Jeppesen A&P Powerplant Textbook 4-4.

Question Number. 23. Engine pressure ratio is the total pressure ratio between the.

Option A. front of the engine inlet and the aft end of the compressor.

Option B. front of the compressor and the rear of the turbine.

Option C. aft end of the compressor and the aft end of the turbine.

Correct Answer is. front of the compressor and the rear of the turbine.

Explanation. Jeppesen A&P Powerplant Textbook 4-4.

Question Number. 24. On an aircraft turbine engine, operating at a constant power, the application of engine anti-icing will result in.

Option A. an increase in E.P.R.

Option B. noticeable shift in E.P.R.

Option C. a false E.P.R reading.

Correct Answer is. noticeable shift in E.P.R.

Explanation. Jeppesen A&P Powerplant Textbook 4-4.

Question Number. 25. The indicator of a tachometer system is responsive to change in.

Option A. voltage. Option B. frequency. Option C. current flow. Correct Answer is. frequency. Explanation. Jeppesen A&P Powerplant Textbook 4-4.

Question Number. 26. The fuel flow indication data sent from motor driven impeller and turbine, and motorless type fuel flow transmitters is a measure of.

Option A. fuel mass flow.

Option B. fuel volume flow.

Option C. engine burner pressure drop.

Correct Answer is. fuel mass flow.

Explanation. Jeppesen A&P Powerplant Textbook 4-4.

Question Number. 27. In addition to fuel quantity, a computerized fuel system (C.F.S) with a totalizer indicator provides indication of how many of the following?.

Option A. Fuel flow rate, Fuel used since reset or initial start up, Fuel time remaining at current power setting.

Option B. Fuel flow rate, Fuel used since reset or initial start up, Fuel time remaining at current power setting, Fuel temperature.

Option C. Fuel flow rate, Fuel used since reset or initial start up, Fuel temperature.

Correct Answer is. Fuel flow rate, Fuel used since reset or initial start up, Fuel time remaining at current power setting.

Explanation. Jeppesen A&P Powerplant Textbook 4-4.

Question Number. 28. The fuel flow indicator rotor and needle for a motor impeller and turbine indicating system is driven by.

Option A. direct coupling to the motor shaft.

Option B. an electrical signal.

Option C. a mechanical gear train.

Correct Answer is. an electrical signal.

Explanation. Jeppesen A&P Powerplant Textbook 4-4.

Question Number. 29. Motor driven impeller and turbine fuel flow transmitters are designed to transmit data.

Option A. using aircraft electrical system power.

Option B. mechanically.

Option C. by fuel pressure.

Correct Answer is. using aircraft electrical system power.

Explanation. NIL.

Question Number. 30. What unit in a tachometer system sends information to the indicator?.

Option A. The two phase AC generator.

Option B. The three phase AC generator.

Option C. The synchronous motor.

Correct Answer is. The three phase AC generator.

Explanation. Jeppesen Aircraft Gas Turbine Powerplants 12-13.

Question Number. 31. Engine oil temperature gauges indicate the temperature of the oil.

Option A.entering the oil cooler.Option B.entering the engine.Option C.in the oil storage tank.Correct Answer is.entering the oil cooler.Explanation.Rolls Royce book fig 8-7.

Question Number. 32. Thermocouple leads.
Option A. may be repaired using solderless connectors.
Option B. are designed for a specific installation and may not be altered.
Option C. may be installed with either lead to either post of the indicator.
Correct Answer is. are designed for a specific installation and may not be altered.
Explanation. NIL.

Question Number. 33. Why do helicopters require a minimum of two synchronous tachometer systems?.

Option A. One indicates engine RPM and the other tail rotor RPM.

Option B. One indicates main rotor RPM and the other tail rotor RPM.

Option C. One indicates engine RPM and the other main rotor RPM.

Correct Answer is. One indicates engine RPM and the other main rotor RPM. Explanation. NIL.

Question Number. 34. If the thermocouple leads were inadvertently crossed at installation, what would the E.G.T gauge pointer indicate?.Option A. Moves off scale on the high side of the meter.Option B. Moves off scale on the zero side of the meter.

Option B. Moves off scale on the zero side of the meter.

Option C. Normal temperature for prevailing condition.

Correct Answer is. Moves off scale on the zero side of the meter.

Explanation. NIL.

Question Number. 35. A common type of electrically operated oil temperature gauge utilizes.

Option A. either a wheatstone bridge or ratiometer circuit.

Option B. a thermocouple type circuit.

Option C. vapour pressure and pressure switches.

Correct Answer is. either a wheatstone bridge or ratiometer circuit.

Explanation. NIL.

Question Number. 36. The indication on a thermocouple-type E.G.T indicator is produced by.

Option A. resistance changes in two dissimilar metals.

Option B. a difference in the voltage between two dissimilar metals.

Option C. a current generated by the temperature difference between dissimilar metal hot and cold junctions.

Correct Answer is. a current generated by the temperature difference between dissimilar metal hot and cold junctions.

Explanation. NIL.

Question Number. 37. What is the Engine Pressure Ratio (E.P.R) used to indicate?.

Option A. The power produced by the engine.

Option B. The thrust produced by the engine.

Option C. As a cross check for minimum acceptable thrust.

Correct Answer is. The thrust produced by the engine.

Explanation. Normally used on High Bypass Engines.

Question Number. 38. Where is Turbine Outlet Temperature (T.O.T) measured?.

Option A. Upstream of the turbine.

Option B. Downstream of the turbine.

Option C. In the combustion chamber.

Correct Answer is. Downstream of the turbine.

Explanation. It can be in the jet pipe or more normally today in between turbine stages or even within NGV's.

Question Number. 39. A thermocouple indicator is basically a.

Option A. milliammeter.

Option B. millivoltmeter.

Option C. milliohmeter.

Correct Answer is. millivoltmeter.

Explanation. A thermocouple generates an E.M.F between hot and cold junction, hence the gauge is a millivoltmeter.

Question Number. 40. A thermocouple indicator is connected to the.

Option A. cold junction.

Option B. hot junction.

Option C. difference between the hot junction and the cold junction.

Correct Answer is. cold junction.

Explanation. Pallett Aircraft Instruments and Integrated Systems Page 362 Refers.

Question Number.41.Thrust in a high bypass fan engine is indicated by.Option A.N3 RPM or P1/P4 ratio.Option B.N1 RPM or N3 RPM.Option C.N1 RPM or E.P.R.Correct Answer is.N1 RPM or E.P.R.Explanation.RR and P&W tend to use E.P.R. GE use N1.

Question Number. 42. How is the N1 and N2 measured on a triple spool engine?.

Option A. Tachometer connected to the internal gearbox.

Option B. Tachometer connected to the external gearbox.

Option C. Pulse type speed probes.

Correct Answer is. Pulse type speed probes.

Explanation. Jeppesen Gas Turbine Powerplants Page 12-16 refer. Fig 12-10B shows the system used on Rolls Royce triple spool engines.

Question Number. 43. Modern oil pressure servo transmitters sense.

- Option A. absolute pressure.
- Option B. H.P oil pressure.
- Option C. differential pressure.
- Correct Answer is. differential pressure.

Explanation. Jeppesen Gas Turbine Powerplants Page 12-28 refer.

Question Number. 44. E.G.T thermocouples are usually made of.

- Option A. nickel and platinum.
- Option B. chromel and platinum.
- Option C. chromel and alumel.

Correct Answer is. chromel and alumel.

Explanation. Jeppesen Gas Turbine Powerplants Page 12-4 refer.

Question Number. 45. Thrust in a high bypass engine is indicated by measuring.

Option A. N3 RPM.

Option B. neither of the above, thrust is not indicated in flight.

Option C. fuel flow.

Correct Answer is. neither of the above, thrust is not indicated in flight.

Explanation. The only indication of power in flight is E.P.R or, for a high bypass engine, N1 RPM.

Question Number. 46. What power supply is required for a thermocouple system to work?.

Option A. Alternating current.

Option B. Direct current.

Option C. Neither of the above.

Correct Answer is. Neither of the above.

Explanation. Rolls Royce the Jet engine Page 139 refers.

Question Number. 47. In a thermocouple temperature sensing system, what is the purpose of the compensating resistor?.

Option A. To correct for varying ambient temperatures at the hot junction.

Option B. To correct for varying ambient temperatures at the cold junction.

Option C. To standardise the reading for different engine types.

Correct Answer is. To correct for varying ambient temperatures at the cold junction.

Explanation. Rolls Royce The Jet Engine page 140 refers.

Question Number. 48. In a tachometer generator.
Option A. the frequency output is inversely proportional to engine speed.
Option B. frequency output is proportional to engine speed.
Option C. the frequency output is constant.
Correct Answer is. frequency output is proportional to engine speed.
Explanation. Pallett Aircraft Instruments and Integrated Systems P348 refers.

Question Number. 49. Vibration pick-ups are located.

Option A. on both fan and turbine cases.

Option B. on the fan/compressor case.

Option C. on the turbine case.

Correct Answer is. on both fan and turbine cases.

Explanation. Can be on one or both, depending upon the engine.

Question Number. 50. In a capacitive type fuel quantity indicating system the tank units are connected in.

Option A. series.

Option B. parallel.

Option C. series/parallel.

Correct Answer is. parallel.

Explanation. EHJ Pallett Aircraft Instruments and Integrated Systems page 337 refers.

Question Number. 51. Torque measurement in a gas turbine engine is.
Option A. not always reliable.
Option B. highly reliable.
Option C. required only when the turbine drives a propeller.
Correct Answer is. required only when the turbine drives a propeller.
Explanation. Rolls Royce The Jet Engine Page 138 refers.

Question Number. 52. Vibration signals, when picked up,.
Option A. go straight to indicator.
Option B. go through half wave rectifier to indicator.
Option C. the frequencies are filtered to exclude unwanted frequencies.
Correct Answer is. the frequencies are filtered to exclude unwanted frequencies.

Explanation. The filters in the Vibro-meter use rotor speed to identify vibration frequencies.

Question Number.53.E.G.T is displayed in.Option A.Kelvin.Option B.degrees centigrade.Option C.degrees Fahrenheit.Correct Answer is.degrees centigrade.Explanation.E.G.T is always measured in centigrade.

Question Number. 54. N2 is taken from.

Option A. a speed transducer on the fan rear frame.

Option B. a tachometer attached on the N1 gearbox.

Option C. a tachometer on the accessory gearbox.

Correct Answer is. a tachometer on the accessory gearbox.

Explanation. The N2 gearbox is driven by the N2 compressor. A single winding of an alternator can be used for the speed signal as an alternative to a.

Question Number. 55. Engine vibration is monitored using.

Option A. electromechanical devices.

Option B. Fenwall type sensors.

Option C. piezoelectric accelerometer.

Correct Answer is. piezoelectric accelerometer.

Explanation. Piezoelectric devices convert force(from the vibration) to a milli-volt output.

Question Number. 56. Integrating fuel flow gives.

Option A. average fuel flow.

Option B. total fuel consumed.

Option C. fuel flow and acceleration.

Correct Answer is. total fuel consumed.

Explanation. An Integrator is incorporated in a fuel flow-meter to give a total fuel used figure.

Question Number. 57. The gauge on a bulb type temperature indicator shows zero. This could be caused by.

Option A. open circuit in the wiring.

Option B. temperature bulb going open circuit.

Option C. two cables shorting together by the sensor.

Correct Answer is. two cables shorting together by the sensor.

Explanation. Pallett Instruments and Integrated systems Page 318 refers. A short will remove all power from both windings and the pointer will go tominimum scale.

Question Number. 58. In a thermocouple system, the size of the E.M.F that is produced is a result of.

Option A. the difference between the hot and cold junction.

Option B. the cold junction only.

Option C. the hot junction only.

Correct Answer is. the difference between the hot and cold junction.

Explanation. The E.M.F is a result of the difference between the 2 junctions.

Question Number. 59. A ballast resistor is fitted.

Option A. in parallel, to give identical readings for all engines.

Option B. in series, to give identical resistance values for all engines.

Option C. in series, to give identical resistance values to all airframes.

Correct Answer is. in series, to give identical resistance values to all airframes. Explanation. NIL.

15.15, Power Augmentation Systems

Question Number.1.When reheat is used, E.P.R.Option A.is reduced.Option B.remains constant.Option C.is increased.Correct Answer is.remains constant.Explanation.Rolls Royce The jet engine page 175 states that as P6 increases in the jet pipe thenozzles are opened to reduce P6 back to its normal value.

Question Number. 2. When reheat is selected and in operation, the mass gas flow.

Option A. decreases. Option B. remains the same. Option C. increases. Correct Answer is. remains the same. Explanation. NIL.

| Question Num | ber. | 3. | Screech liners in the afterburning jet pipe |
|---------------|---------|---------|---|
| Option A. | preven | t unsta | ble combustion. |
| Option B. | preven | t cycli | c vibrations of large amplitude. |
| Option C. | acts as | noise | suppressors. |
| Correct Answe | er is. | preve | nt cyclic vibrations of large amplitude. |
| Explanation. | NIL. | | |

Question Number. 4. Water methanol for cooling is injected into the.
Option A. compressor inlet or outlet.
Option B. engine hot zone.
Option C. combustion chamber.
Correct Answer is. compressor inlet or outlet.
Explanation. Jepperson Gas Turbine Powerplants Page 7-41 refers.

Question Number. 5. On an injection system.

Option A. methanol is injected neat.

Option B. town water/methanol is injected.

Option C. demineralized water/methanol is injected.

Correct Answer is. demineralized water/methanol is injected.

Explanation. Jepperson Gas Turbine Powerplants Page 7-41 refers.

6. When using water methanol in an axial flow compressor, it is Ouestion Number. injected into the. Option A. compressor inlet or burner section. Option B. burner. Option C. intake. Correct Answer is. compressor inlet or burner section. Jepperson Gas Turbine Powerplant Fig 7-32. Explanation. 7. The main reason for adding methanol to the water is to. Question Number.

Option A. temper the cooling effect of the water to prevent distortion.

Option B. supply the additional heat required.

Option C. prevent mixture freezing.

Correct Answer is. prevent mixture freezing.

Explanation. Rolls Royce The Jet Engine page 181 refers.

Question Number. 8. The primary purpose of water injection is to.

Option A. decrease mass airflow.

Option B. increase the calorific value of the fuel.

Option C. cool the turbine.

Correct Answer is. cool the turbine.

Explanation. Notice that the answers did not include 'increase mass airflow'. Cooling the turbine is the primary purpose o=if the water is injected in the combustor outlet manifold.

Question Number.9.Water used in a thrust augmentation system should be demineralisedto prevent.Option A.blocking the jet.

Option B. carbon formation.

Option C. fouling the blades and vanes.

Correct Answer is. fouling the blades and vanes.

Explanation. NIL.

Question Number. 10. The quantity of water usually carried by an aircraft equipped with water injection is enough for.
Option A. three take-offs.
Option B. one take-off.
Option C. two take-offs.
Correct Answer is. one take-off.
Explanation. Jeppesen Gas Turbine Powerplants Page 7-41 refers.

Question Number.11.Water methanol injection will increase thrust by up to.Option A.70%.Option B.50%.Option C.30%.Correct Answer is.30%.Explanation.Jeppesen Aircraft Gas Turbine Powerplant page 7-41 shows 10-15% so 30% is nearest.

| Question Num | ber. | 12. | Injection of water/methanol into compressor inlet causes. |
|---------------|---------|-----------|---|
| Option A. | increas | se in po | wer due to the burning of methanol alone. |
| Option B. | increas | se in po | wer without the need for burning extra fuel. |
| Option C. | increas | sed effic | ciency of the engine due to reduced icing in the airflow. |
| Correct Answe | er is. | increas | se in power without the need for burning extra fuel. |
| Explanation. | Jeppes | en Airc | raft gas Turbine Power plant page 7-41 refers. |

| Question Num | ber. | 13. | Reheat is the term used to describe. |
|---------------|---------|---------|--------------------------------------|
| Option A. | adding | fuel in | the exhaust section. |
| Option B. | adding | of fuel | in the turbine section. |
| Option C. | adding | of fuel | in the compressor section. |
| Correct Answe | er is. | adding | fuel in the exhaust section. |
| Explanation. | Rolls R | loyce T | he Jet Engine Page 169 refers. |

| Question Num | ber. | 14. | Water/methanol is injected. |
|---------------|---------|----------|---|
| Option A. | at high | temper | atures. |
| Option B. | at high | temper | ature, at high altitudes. |
| Option C. | at high | temper | atures or high altitudes. |
| Correct Answe | er is. | at high | temperatures or high altitudes. |
| Explanation. | Jeppese | en aircr | aft gas turbine Powerplants Page 7-39 refers. |

Question Number. 15. The reheat ignition system which incorporates a platinum/rhodium element is known as.

- Option A. catalytic ignition.
- Option B. hot-shot ignition system.
- Option C. spark ignition system.
- Correct Answer is. catalytic ignition.
- Explanation. fuel sprayed on to the catalytic element heats up and ignites.

16. Water or water/methanol injected into the combustion chamber inlet Ouestion Number. increases. Option A. mass airflow through the turbine. Option B. combustion chamber outlet temperatures. Option C. fuel to air ratio by up to 20%. Correct Answer is. mass airflow through the turbine. Jeppesen Gas turbine Power plant page 7-41 refers. Explanation. Question Number. 17. Methanol is added to water when augmenting thrust in order to. reclaim lost pressure at the compressor. Option A. Option B. increase the density of air entering the compressor. reclaim lost heat at the turbines. Option C. Correct Answer is. reclaim lost heat at the turbines. Explanation. Methanol burns, but its heat output is low. It's prime purpose is to act as an antifreeze in the water. Question Number. 18. Afterburning is initiated in order to. Option A. heat the exhaust to prevent choking at subsonic gas velocities. Option B. burn off the fuel that is not combusted in the combustion section. increase the local speed of sound at the jet nozzle. Option C. Correct Answer is. increase the local speed of sound at the jet nozzle. Explanation. A faster SoS allows for greater momentum thrust at the exhaust nozzle.

Question Number. 19. How is the flame stabilised in the reheat system of a gas turbine engine?.

Option A. By creating a greater potential between inlet & jet pipe temperatures.

Option B. By ensuring that the gas velocity is greater than the flame velocity.

Option C. By ensuring that the flame velocity is greater than the gas velocity.

Correct Answer is. By ensuring that the gas velocity is greater than the flame velocity.

Explanation. The guttering in the reheat manifolds allows the flame to stabilise at the point.

Question Number. 20. During operation of the engine equipped with water injection system, the metering of the coolant to the system is.

Option A. selected by the pilot.

Option B. due to atmospheric pressure.

Option C. due to altitude change.

Correct Answer is. selected by the pilot.

Explanation. Water injection is used on take off as required by the pilot.

Question Number. 21. Water methanol injection is used.

Option A. at high altitude take off conditions only.

Option B. at a combination of higher than normal air temperatures and high altitude take off conditions.

Option C. at higher than normal ambient air temperatures only.

Correct Answer is. at higher than normal ambient air temperatures only.

Explanation. Water Methanol adds to the weight of the air thus compensating for reduced density.

<u>15.16, Turbo-prop Engines</u>

Question Number.1.A free turbine is usually found on a.Option A.turbo-jet.Option B.turbo-fan.Option C.turbo prop.Correct Answer is.turbo prop.Explanation.NIL.

Question Number.2.A free turbine is.Option A.not directly connected to the power output shaft.Option B.connected directly to the propeller and compressor.Option C.connected directly to the power output shaft.Correct Answer is.connected directly to the power output shaft.Explanation.Rolls Royce The Jet Engine page 5 refers.

Question Number. 3. The fuel flow in a turboprop engine within the constant speed range is controlled.

Option A. automatically.

Option B. manually.

Option C. No Control.

Correct Answer is. automatically.

Explanation. Once the power lever has set the gas generator RPM it is controlled automatically to maintain the constant speed.

Question Number. 4. Torque measurement is taken from the.

Option A. reduction gearbox.

Option B. prop shaft.

Option C. free turbine shaft.

Correct Answer is. reduction gearbox.

Explanation. Rolls Royce The Jet Engine Page 137 refers.

Question Number.5.Electrical propeller de-icing pads are.Option A.at the root.Option B.at the tip.Option C.on the trailing edge.Correct Answer is.at the root.Explanation.On the leading edge from the root outward.

Question Number. 6. Fuel trimming on a turboprop engine is.
Option A. pilot controlled.
Option B. governor controlled.
Option C. automatic.
Correct Answer is. governor controlled.
Explanation. Rolls Royce The Jet Engine page 98 refers.

Question Number. 7. What controls the fuel trimmer on a turboprop engine?.

- Option A. The blade angle.
- Option B. Propeller Control Unit.
- Option C. Engine Speed Governor.

Correct Answer is. Engine Speed Governor.

Explanation. Rolls Royce The Jet Engine page 98 refers.

Question Number. 8. What is the purpose of the reduction gear on a propeller driven engine?.

Option A. To maintain a constant propeller blade speed.

Option B. To enable torque measurement.

Option C. To prevent the propeller tips reaching the speed of sound.

Correct Answer is. To prevent the propeller tips reaching the speed of sound.

Explanation. Reduction ratios vary between 13.5 :1 and 10:1.

Question Number. 9. If an E.P.R gauge is installed on turbofans as a measure of power output, what is used on a turboprop?.

Option A. E.P.R gauge.

Option B. Torque-meter.

Option C. Thermocouples.

Correct Answer is. Torque-meter.

Explanation. Torque is used because it is measuring the resistance to rotation of the propeller, which is turned by the power of the engine.

Question Number. 10. What type of reduction gear is used on most turboprop modern engines?.

Option A. Helical cut parallel spur gears.

Option B. Epicyclic reduction gear.

Option C. Straight cut parallel spur gears.

Correct Answer is. Epicyclic reduction gear.

Explanation. Epicyclic gearing is essential to enable the very large torque to be safely absorbed.

15.17, Turbo-Shaft Engines.

Question Number. 1. A turbo-shaft engine has.

Option A. a mechanical connection between compressor and turbine.

Option B. a power shaft which is not connected to the compressor.

Option C. none of the above.

Correct Answer is. a power shaft which is not connected to the compressor.

Explanation. Jepperson Gas Turbine Powerplants Page 2-6 refers.

Question Number. 2. On a twin spool turbo-shaft engine, the free turbine is connected to the.

Option A. output gearbox.

Option B. L.P gearbox.

Option C. H.P gearbox.

Correct Answer is. output gearbox.

Explanation. The output gearbox will normally contain a reduction gear system and torque measuring equipment.

Question Number. 3. In the majority of helicopters, the thrust generated by the gas generator is absorbed by the.

Option A. L.P turbine.

Option B. Free power turbine.

Option C. H.P turbine.

Correct Answer is. Free power turbine.

Explanation. The power turbine drives a reduction/rotor transmission gearbox.

15.20 Fire Protection Systems

Question Number.1.A fire wire is installed.Option A.to withstand inertia, vibration, etc, encountered during normal operation.Option B.vertically.Option C.horizontally.Correct Answer is.to withstand inertia, vibration, etc, encountered during normal operation.Explanation.Firewires can be any shape or position, retained in rubber clips.

Question Number.2.Resistive and capacitive type firewires are tested with.Option A.megger/voltmeter.Option B.megger/ohmmeter.Option C.multimeter.Correct Answer is.megger/ohmmeter.

Explanation. Jepperson A&P Powerplant Page 11-11 refers.

Question Number. 3. Fire wire clips have rubber in them to.

Option A. stop heat transfer to the element.

Option B. insulate the fire wire electrically.

Option C. support the wire.

Correct Answer is. support the wire.

Explanation. Jepperson A&P Powerplant Page 11-9 refers.

Question Number. 4. Fire extinguishers work by.

Option A. combining with remaining oxygen to get rid of it.

Option B. creating more oxygen.

Option C. reducing oxygen.

Correct Answer is. combining with remaining oxygen to get rid of it.

Explanation. Jepperson Gas Turbine Powerplants Page 13-6 refers (Halon 1211).

Question Number. 5. Fire detection systems which are routed through another zone.

Option A. must be protected by the use of heat sinks.

Option B. must be protected from heat sources in the zone.

Option C. are not allowed.

Correct Answer is. must be protected from heat sources in the zone.

Explanation. JAR 25.1203 states that a fire detection device must not pass through another zone unless it is protected from the heat of that zone.

Question Number.6.The test switch of a continuous loop detector gives a.Option A.continuity check.Option B.insulation check.Option C.bonding check.Correct Answer is.continuity check.Explanation.Jepperson Gas Turbine Powerplant Page 13-3.

Question Number.7.What are the types of continuous fire detection system?.Option A.Capacitance.Option B.Capacitance and resistance.Option C.Inductance and capacitance.

Correct Answer is. Capacitance and resistance.

Explanation. Jepperson Gas Turbine Powerplant Page 13-3.

Question Number. 8. What is the operating principle of the spot detector sensor in a fire detection system?.

Option A. A conventional thermocouple that produces a current flow.

Option B. A bimetallic thermoswitch that closes when heated to a high temperature.

Option C. Resistant core material that prevents current flow at normal temperatures.

Correct Answer is. A bimetallic thermoswitch that closes when heatedto a high temperature.

Explanation. Jeppesen A&P Powerplant Textbook 11-2.

Question Number. 9. In a fixed fire-extinguishing system, there are two small lines running from the system and exiting overboard. These line exit ports are covered with a blowout type indicator disc. Which of the following statements is true?.

Option A. When the red indicator disc is missing, it indicates the fire extinguishing system has been normally discharged.

Option B. When the green indicator disc is missing, it indicates the fire extinguishing system has had a thermal discharge.

Option C. When the yellow indicator disc is missing, it indicates the fire extinguishing system has been normally discharged.

Correct Answer is. When the yellow indicator disc is missing, it indicates the fire extinguishing system has been normally discharged.

Explanation. NIL.

Question Number. 10. Two continuous-loop fire detection systems that will not test due to a broken detector element are the.

Option A. thermocouple system and the Lindberg system.

Option B. Kidde system and the Fenwal system.

Option C. Kidde system and the Lindberg system.

Correct Answer is. Kidde system and the Fenwal system.

Explanation. Jeppesen A&P Powerplant Textbook 16-15.

Question Number. 11. Which of the following fire detection systems measures temperature rise compared to a reference temperature?.
Option A. Lindberg continuous element.
Option B. Thermocouple.
Option C. Thermal switch.
Correct Answer is. Thermocouple.
Explanation. Jeppesen A&P Powerplant Textbook 11-4.

Question Number. 12. A fire involving energized electrical equipment is defined as a.

Option A. class B fire. Option B. class D fire. Option C. class C fire. Correct Answer is. class C fire. Explanation. NIL.

Question Number.13.How are most aircraft turbine engine fire extinguishing systems
activated?.Option A.Manual remote control valve.Option B.Pushrod assembly.Option C.Electrically discharged cartridges.Correct Answer is.Electrically discharged cartridges.Explanation.NIL.

Question Number.14.A fire detection system that operates on the rate of temperature rise isa.Option A.thermocouple system.Option B.thermal switch system.Option C.continuous loop system.Correct Answer is.thermocouple system.Explanation.NIL.

Question Number. 15. Why does one type of Fenwal fire detection system use spot detectors wired in parallel between two separate circuits?.

Option A. So that a single fault may exist in the system without sounding a false alarm. Option B. To provide an installation that is equal to two separate systems: a primary system and a secondary, or back-up system.

Option C. So that a double fault may exist in the system without sounding a false alarm. Correct Answer is. So that a single fault may exist in the system without sounding a false alarm.

Explanation. NIL.

Question Number. 16. How does carbon dioxide (CO2) extinguish an aircraft engine fire?.

Option A. By lowering the temperature to a point where combustion will not take place.

Option B. The high pressure spray lowers the temperature and blows out the fire.

Option C. Contact with the air converts the liquid into snow and gas which smothers the flame.

Correct Answer is. Contact with the air converts the liquid into snow and gas which smothers the flame.

Explanation. NIL.

| Question Number | r. | 17. | A fuel or oil fire is defined as a. |
|-----------------|-------|---------|-------------------------------------|
| Option A. cl | ass B | fire. | |
| Option B. cl | ass C | fire. | |
| Option C. cl | ass A | fire. | |
| Correct Answer | s. | class E | 3 fire. |
| Explanation. N | IL. | | |

Question Number. 18. Which of the following is the safest fire extinguishing agent to use from a standpoint of toxicity and corrosion hazards?
Option A. Bromotrifluoromethane (Halon 1301).
Option B. Bromochlorodifluoromethane (Halon 1211).
Option C. Dibromodifluoromethane (Halon 1202).
Correct Answer is. Bromotrifluoromethane (Halon 1301).

Explanation. NIL.

Question Number. 19. The explosive cartridge in the discharge valve of a fire extinguisher container is.

Option A. not a life dated unit.

Option B. a life dated unit.

Option C. mechanically fired.

Correct Answer is. a life dated unit.

Explanation. Jeppesen A&P Technician Airframe Textbook 16-22.

Question Number. 20. A fire detection system operates on the principle of a buildup of gas pressure within a tube proportional to temperature. Which of the following systems does this statement define?.

Option A. Thermal switch system.

Option B. Lindberg continuous element system.

Option C. Kidde continuous loop system.

Correct Answer is. Lindberg continuous element system.

Explanation. Jeppesen A&P Technician Powerplant Textbook 11-16.

Question Number. 21. The most satisfactory extinguishing agent for an intake fire is.

| Option A. | methyl bromide. | | | |
|----------------------------------|--|--|--|--|
| Option B. | dry chemical. | | | |
| Option C. | carbon dioxide. | | | |
| Correct Answer is. dry chemical. | | | | |
| Explanation. | Jeppesen A&P Technician Propulsion Textbook 16-22. | | | |

Question Number. 22. How is the fire extinguishing agent distributed in the engine section?.

Option A. Spray nozzles and perforated tubing.

Option B. Spray nozzles and fluid pumps.

Option C. Nitrogen pressure and slinger rings.

Correct Answer is. Spray nozzles and perforated tubing.

Explanation. Jeppesen A&P Technician Propulsion Textbook 16-22.

Question Number. 23. What is the principle of operation of the continuous loop fire detector system sensor?.

Option A. Core resistance material which prevents current flow at normal temperatures.

Option B. A bimetallic thermoswitch which closes when heated to a high temperature.

Option C. Fuse material which melts at high temperatures.

Correct Answer is. Core resistance material which prevents current flow at normal temperatures.

Explanation. Jeppesen A&P Technician Propulsion Textbook 11-5.

Question Number. 24. The fire detection system that uses a single wire surrounded by a continuous string of ceramic beads in a tube is the.

Option A. Kidde system.

Option B. thermocouple system.

Option C. Fenwal system.

Correct Answer is. Fenwal system.

Explanation. Jeppesen A&P Technician Propulsion Textbook 11-5.

Question Number. 25. The fire detection system that uses two wires imbedded in a ceramic core within a tube is the.

Option A. Lindberg system.

Option B. Kidde system.

Option C. Fenwal system.

Correct Answer is. Kidde system.

Explanation. Jeppesen A&P Technician Propulsion Textbook 11-5.

Question Number. 26. A continuous loop fire detector is what type of detector?.

Option A. Rate of temperature rise detector.

Option B. Spot detector.

Option C. Overheat detector.

Correct Answer is. Overheat detector.

Explanation. Jeppesen A&P Technician Propulsion Textbook 11-5.

Question Number. 27. Which of the following fire detection systems will detect a fire when an element is inoperative but will not test when the test circuit is energized?.

Option A. The Kidde system and the Fenwal system.

Option B. The thermocouple system and the Lindberg system.

Option C. The Kidde system and the thermocouple system.

Correct Answer is. The Kidde system and the Fenwal system.

Explanation. Jeppesen A&P Technician Propulsion Textbook 11-5

Question Number. 28. After a fire is extinguished, or overheat condition removed in aircraft equipped with a Systron-Donner fire detector, the detection system.

- Option A. must be manually reset.
- Option B. automatically resets.

Option C. sensing component must be replaced.

Correct Answer is. automatically resets.

Explanation. Jeppesen A&P Technician Propulsion Textbook 11-7.

Question Number. 29. For fire detection and extinguishing purposes, aircraft powerplant areas are divided into fire zones based on.

Option A. the volume and smoothness of the airflow through enginecompartments.

Option B. engine type and size.

Option C. hot and cold sections of the engine.

Correct Answer is. hot and cold sections of the engine.

Explanation. NIL.

Question Number. 30. What is the function of a fire detection system?.

Option A. To discharge the powerplant fire extinguishing system at the origin of the fire.

Option B. To activate a warning device in the event of a powerplant fire.

Option C. To identify the location of a powerplant fire.

Correct Answer is. To activate a warning device in the event of a powerplant fire. Explanation. NIL.

Question Number. 31. What retains the nitrogen charge and fire extinguishing agent in a high rate of discharge (HRD) container?.

Option A. Pressure gauge and cartridge.

Option B. Breakable disk or fusible disk.

Option C. Pressure switch and check tee valve.

Correct Answer is. Breakable disk or fusible disk.

Explanation. Jeppesen A&P Technician Propulsion Textbook 11-15.

Question Number. 32. The use of water on class D fires.

Option A. will cause the fire to burn more violently and can cause explosions.

Option B. has no effect.

Option C. is most effective if sprayed in a fine mist.

Correct Answer is. will cause the fire to burn more violently and can cause explosions.

Explanation. Jeppesen A&P Technician Propulsion Textbook 11-12.

Question Number. 33. The pulling out (or down) of an illuminated fire handle in a typical large jet aircraft fire protection system commonly accomplishes what events?.

Option A. Closes fuel shutoff, closes hydraulic shutoff, disconnects the generator field, and arms the fire extinguishing system.

Option B. Closes fuel shutoff, closes hydraulic shutoff, closes the oxygen shutoff, disconnects the generator field, and arms the fire-extinguishing system.

Option C. Closes all firewall shutoff valves, disconnects the generator, and discharges a fire bottle.

Correct Answer is. Closes fuel shutoff, closes hydraulic shutoff, disconnects the generator field, and arms the fire extinguishing system.

Explanation. NIL.

Question Number. 34. The most satisfactory extinguishing agent for an electrical fire is.

Option A. carbon tetrachloride.

Option B. methyl bromide.

Option C. carbon dioxide.

Correct Answer is. carbon dioxide.

Explanation. Jeppesen A&P Technician Propulsion Textbook 11-13

Question Number. 35. Which of the following fire detectors are commonly used in the power section of an engine nacelle?.

Option A. Rate of temperature rise detectors.

Option B. CO detectors.

Option C. Smoke detectors.

Correct Answer is. Rate of temperature rise detectors.

Explanation. Jeppesen A&P Technician Propulsion Textbook 11-3.

Ouestion Number. 36. Which of the following fire detection systems uses heat in the normal testing of the system?. Option A. The Kidde system and the Fenwal system. Option B. The thermocouple system and the Lindberg system. Option C. The thermocouple system and the Fenwal system. Correct Answer is. The thermocouple system and the Lindberg system. Explanation. Jeppesen A&P Technician Propulsion Textbook 11-5. Question Number. 37. How are extinguisher spray rings checked for freedom from obstruction?.

Option A. Firing the system.

Option B. Blowing through with compressed air.

Option C. Pumping water through the system.

Correct Answer is. Blowing through with compressed air.

Explanation. Answer a is the only reasonable answer.

Question Number. 38. What is used as an extinguishant in fire bottles?.

Option A. Freon compounds.

Option B. Halogenated hydrocarbons.

Option C. Water.

Correct Answer is. Halogenated hydrocarbons.

Explanation. Jeppesen Aircraft Gas Turbines Powerplant Page 13-6 refers, BUT Halogenated Hydrocarbons are Freon compounds. Rolls Royce Page 157 also refers.

Question Number. 39. The advantage of the two shot fire bottle system is.

Option A. one bottle can be discharged after certain time delay from the other bottle.

Option B. both bottles can be used in either of the engines.

Option C. one bottle can be used twice.

Correct Answer is. both bottles can be used in either of the engines.

Explanation. Jeppesen Gas Turbine Engines 13-6 refers. Note that each bottle can only be discharged once.

Question Number. 40. To check a fire bottle in situ is serviceable.

Option A. weigh it, check blow out discs, check pressure.

Option B. check blow out disc only.

Option C. check blow out disc, pop up indicators, expiry date and pressure.

Correct Answer is. check blow out disc, pop up indicators, expiry date and pressure.

Explanation. C.A.I.Ps AL3/10 para 4.3 mentions all these things.

Question Number. 41. Resistive type fire-wires are tested using.

Option A. megger/ohmmeter.

Option B. ammeter/ohmmeter.

Option C. megger/voltmeter.

Correct Answer is. megger/ohmmeter.

Explanation. The megger tests insulation the ohmmeter tests continuity.

Question Number. 42. When testing an installed fire bottle.

Option A. a multimeter used.

Option B. a lamp and 1.5V cell used.

Option C. a safety ohmmeter is used.

Correct Answer is. a safety ohmmeter is used.

Explanation. Any explosive device requires the use of a safety ohmmeter to limit current flow through the ignitor.

Question Number. 43. On checking a fault free fire detection system.

Option A. use megger as per normal.

Option B. a megger is never to be used.

Option C. use a megger only for a short while as it can polarise the element.

Correct Answer is. use a megger only for a short while as it can polarise the element.

Explanation. The fault free or continuous loop firewire is capacitive and resistive. Prolonged use of the megger could polarise or charge the firewire, to give a false capacitive reading.

Question Number. 44. 3 ways to test serviceability of a fixed fire bottle in situ are.

Option A. weigh, pressure, blow-out disc.

Option B. weigh, pressure, pop up indicator.

Option C. pressure, pop up indicator, blow-out disc.

Correct Answer is. pressure, pop up indicator, blow-out disc.

Explanation. A&P Mechanic Handbook EA-AC-65 Page 401 refers(You can't weigh the bottle in situ).

Question Number. 45. When installing a flow valve on a 'two shot' fire extinguishing system care must be taken to make sure.

Option A. flow arrow should be in a correct direction.

Option B. flow valve is pointing towards the respective bottle.

Option C. priority system must have the bigger flow side.

Correct Answer is. flow arrow should be in a correct direction.

Explanation. Two shot systems do not have any priority. Any flow valve must be fitted in the right direction which is toward the engine not the bottle!.

46. Omission of crushable washer on engine fire-wire connector will. **Question Number.**

Option A. allow moisture ingress.

Option B. affect fire wire continuity.

Option C. affect fire wire capacitance.

Correct Answer is. allow moisture ingress.

Explanation. Jeppesen A&P power plant page 11-10 refers to copper crush washers at the connectors. Answers a and c cannot be right therefore b makes best sense.

Question Number. 47. Discharge cartridges of the fire bottle have.

Option A. life time in hours/calendar and replace which ever is longer.

Option B. life time in hours/or calendar and replace which ever is sooner.

Option C. no life time it is only replaced when unserviceable.

life time in hours/or calendar and replace which ever is sooner. Correct Answer is.

Explanation. Operators usually change cartridges at planned checks. The cartridge also has a finite manufactures calendar life. This is normally longer.

Question Number. 48. The Kidde Fault Free Fire detection system has how many internal wires in the sensing element?.

Option A. 1. Option B. 3. 2. Option C. 2. Correct Answer is. Explanation. Jeppesen Gas Turbine Powerplants Page 12-5 Refers.

Question Number. 49. When testing a two pin fire bottle connector. Option A. continuity test 1 pin then short two together. Option B. short two pins together. Option C. continuity test 1 pin, then the other, then short two together.

Correct Answer is. short two pins together.

Explanation. C.A.I.Ps EEL/1-7 para 3.6.4 States that to check for insulation short two pins together and check for insulation resistance between body and shorted pins from body.

Ouestion Number. 50. Gas type fire-wires operate by utilising.

Option A. the change in the gas pressure.

Option B. the change in the gas dielectric level.

Option C. the change in the electrical resistance of the gas.

Correct Answer is. the change in the gas pressure.

Explanation. RR The Jet Engine page 156 Para 16 refers. These gas filled type fire-wires go by the name of 'Systron Donner'.

Question Number. 51. On a fire bottle, if the indicator pin was protruding, this would indicate.
Option A. the bottle is under weight.
Option B. extinguisher had been fired.
Option C. an over pressure had occurred in the bottle.
Correct Answer is. extinguisher had been fired.
Explanation. C.A.I.P's AL/3-10 describes and shows a discharge indicator pin device.

Question Number. 52. When testing a squib on a fire bottle, you use a.

Option A. multimeter (AVO).

Option B. low current ohmmeter.

Option C. lamp and 1.5V cell.

Correct Answer is. low current ohmmeter.

Explanation. Rolls Royce the Jet Engine Page 28 refers.

Question Number. 53. In a two shot fire extinguishing system.
Option A. extinguishers distributed once to either engine compartment.
Option B. extinguisher distributed twice to each enginecompartment.
Option C. one squib can be fired, if that fails then the 2nd squib can be fired.
Correct Answer is. extinguishers distributed once to either engine compartment.
Explanation. One shot from each bottle to either engine or both shots to one engine.

Question Number. 54. Methyl Bromide fire extinguisher are installed with neck.
Option A. horizontal.
Option B. at the bottom.
Option C. at the top.
Correct Answer is. at the top.
Explanation. The heavier fluid is pushed out of the bottle by the head of gas sitting above the liquid.

Question Number.55.In a Fenwall fire detection system.Option A.the tube is inconel and wire is nickel.Option B.inner electrode is inconel wire.Option C.outer electrode is nickel tube.Correct Answer is.the tube is inconel and wire is nickel.Explanation.NIL.www.fenwallcontrols.com
Question Number. 56. When a fire extinguisher is discharged the immediate action is.

Option A. operate engine to idle.

Option B. clean with cold water.

Option C. clean with hot water.

Correct Answer is. clean with hot water.

Explanation. When the extinguishant is introduced into the gas path hot water should be used. Jeppesen Gas Turbine Powerplants Page 13-8 refers.

15.21, Engine Monitoring and Ground Operation.

Question Number. 1. Who establishes the recommended operating time between overhauls (T.B.O) of a gas turbine engine.

Option A. The engine manufacturer.

Option B. The operator (utilizing manufacturer data and trend analysis) working in conjunction with the Airworthiness Authority.

Option C. The Airworthiness Authority alone.

Correct Answer is. The operator (utilizing manufacturer data and trend analysis) working in conjunction with the Airworthiness Authority.

Explanation. Jeppesen A&P Powerplant Textbook 3-27.

Question Number. 2. What is the first engine instrument indication of a successful start of a turbine engine?.

Option A. A rise in oil pressure.

Option B. A rise in the engine fuel flow.

Option C. A rise in the exhaust gas temperature.

Correct Answer is. A rise in the exhaust gas temperature.

Explanation. NIL.

Question Number. 3. A hung start is indicated by the.

Option A. exhaust gas temperature exceeds specified limits.

Option B. fails to reach idle RPM.

Option C. RPM exceeds specified operating speed.

Correct Answer is. fails to reach idle RPM.

Explanation. Jeppesen A&P Powerplant Textbook 4-7.

Question Number. 4. The blending of blades and vanes in a turbine engine.

Option A. may sometimes be accomplished with the engine installed, ordinarily using power tools.

Option B. should be performed parallel to the length of the blade using smooth contours to minimize stress points.

Option C. is usually accomplished only at engine overhaul.

Correct Answer is. No Answer.

Explanation. NIL.

Question Number. 5. During inspection, turbine engine components exposed to high temperatures may only be marked with such materials as allowed by the manufacturer. These materials generally include.

Option A. layout dye, commercial felt tip marker or chalk.

Option B. layout dye, commercial felt tip marker, wax or grease pencil.

Option C. layout dye, commercial felt tip marker, wax or grease pencil, chalk or graphite lead pencil.

Correct Answer is. layout dye, commercial felt tip marker or chalk.

Explanation. Jeppesen A&P Powerplant Textbook 4-26.

Question Number. 6. When the leading edge of a first stage turbine blade is found to have stress rupture cracks, which of the following should be suspected?.

Option A. Faulty cooling shield.

Option B. Over speed condition.

Option C. Over temperature condition.

Correct Answer is. Over temperature condition.

Explanation. Jeppesen A&P Powerplant Textbook 4-25.

Question Number. 7. A magnetic chip detector inspection should be carried out.

Option A. within a specified time from shut down.

Option B. with engine cold.

Option C. with engine running.

Correct Answer is. within a specified time from shut down.

Explanation. A.L.F 502 and 507 engines on 146/R.J specify that the engine M.C.D be checked after 20mins but before 2 hrs since shut down.

Question Number. 8. What is the proper starting sequence for a turbojet engine?.

- Option A. Starter, ignition, fuel.
- Option B. Starter, fuel, ignition.

Option C. Ignition, starter, fuel.

Correct Answer is. Starter, ignition, fuel.

Explanation. Jeppesen A&P Powerplant Textbook 4-7.

Question Number. 9. Foreign object damage on a compressor, when boroscoping, is indicated by.

Option A. tip curl.

Option B. nicks and scores.

Option C. flats.

Correct Answer is. nicks and scores.

Explanation. Jepperson Gas Turbine Powerplants Page 5-13 refers.

Question Number. 10. Turbine blades are generally more susceptible to operating damage than compressor blades because of.

Option A. higher temperature stresses.

Option B. higher centrifugal loading.

Option C. high pressure and high velocity gas flow.

Correct Answer is. higher temperature stresses.

Explanation. NIL.

Question Number. 11. A magnetic chip detector detects.

Option A. particles held in suspension.

Option B. particles which are too small for the naked eye.

Option C. ferrous particles only.

Correct Answer is. ferrous particles only.

Explanation. Jepperson Gas Turbine Powerplants Page 6-26 refers.

Question Number. 12. A cool-off period prior to shutdown of a turbine engine is done to.

Option A. prevent vapor lock in the fuel control and/or fuel lines.

Option B. prevent seizure of the engine bearings.

Option C. allow the turbine wheel to cool before the case contracts around it.

Correct Answer is. allow the turbine wheel to cool before the case contracts around it.

Explanation. Jeppesen A&P Powerplant Textbook 4-9.

Question Number. 13. When starting a turbine engine, the starter should be disengaged.

Option A. only after the engine has reached full idle RPM.

Option B. when the ignition and fuel system are activated.

Option C. after the engine has reached self-sustaining speed.

Correct Answer is. after the engine has reached self-sustaining speed.

Explanation. Jeppesen A&P Powerplant Textbook 4-7.

Question Number. 14. What should be done initially if a turbine engine catches fire when starting?.

Option A. Continue starting attempt in order to blow out the fire.

Option B. Continue engine start rotation and discharge a fire extinguisher into the intake.

Option C. Turn off the fuel and continue engine rotation with the starter.

Correct Answer is. Turn off the fuel and continue engine rotation with the starter.

Explanation. Jeppesen A&P Powerplant Textbook 4-7.

Question Number.15.A turbine engine hot section is particularly susceptible to which kind
of damage?.Option A.Scoring.Option B.Galling.Option C.Cracking.Correct Answer is.Cracking.Explanation.NIL.

Question Number. 16. If a turbine engine is unable to reach takeoff E.P.R before its E.G.T limit is reached, this is an indication that the.
Option A. fuel control must be replaced.
Option B. E.G.T controller is out of adjustment.
Option C. compressor may be contaminated or damaged.
Correct Answer is. compressor may be contaminated or damaged.
Explanation. NIL.

Question Number. 17. Which of the following engine variables is the most critical during turbine engine operation?.

Option A. Compressor RPM.

Option B. Turbine inlet temperature.

Option C. Compressor inlet air temperature.

Correct Answer is. Turbine inlet temperature.

Explanation. NIL.

Question Number. 18. With the engine running at idle, the E.P.R system reads just over 1.

Option A. The system has failed and needs attention.

Option B. The system needs re-calibration back to '1'.

Option C. This is a normal condition and does not need attention.

Correct Answer is. This is a normal condition and does not need attention.

Explanation. E.P.R with the engine shut down should read 1. At idle a very small pressure increase occurs in the jet pipe.

Question Number. 19. The recurrent ingestion of dust or other fine airborne particulates into an engine can result in.

Option A. the need for less frequent abrasive grit cleaning of the engine.

Option B. foreign object damage to the compressor section.

Option C. erosion damage to the compressor and turbine sections.

Correct Answer is. erosion damage to the compressor and turbine sections.

Explanation. NIL.

When the engine is not running, and engine blanks are installed. The

E.P.R gauge shows 1.0, then. Option A. the transmitter is faulty. Option B. the receiver is faulty. Option C. it is normal. Correct Answer is. it is normal. Explanation. Jepperson Gas Turbine Powerplant Page 12-17 Figure 12-12A. Question Number. 21. Which of the following may be used to accomplish internal inspection of an assembled gas turbine engine?. Ultrasound, and fluorescent penetrant and ultraviolet light. Option A. Option B. X-ray and a borescope. Option C. Infrared photography and fluorescent penetrant and ultraviolet light. X-ray and a borescope. Correct Answer is. Explanation. NIL.

Question Number. 22. Run down time is indicative of.

Option A. an F.C.U malfunction.

Ouestion Number.

20.

Option B. compressor malfunction.

Option C. the freedom of rotation of the compressor.

Correct Answer is. the freedom of rotation of the compressor.

Explanation. Short run down time is indicative of bearing failure.

Question Number. 23. A hung start or false start is one in which.

Option A. light up' occurs, but the RPM does not increase.

Option B. there is no 'light up'.

Option C. the engine does not rotate.

Correct Answer is. light up' occurs, but the RPM does not increase.

Explanation. Jeppesen Gas Turbine Powerplants Page 10-1 Refers.

Question Number. 24. What would be the possible cause if a gas turbine engine has high exhaust gas temperature, high fuel flow, and low RPM at all engine power settings?.

Option A. Fuel control out of adjustment.

Option B. Loose or corroded thermocouple probes for the E.G.T indicator.

Option C. Turbine damage or loss of turbine efficiency.

Correct Answer is. Turbine damage or loss of turbine efficiency.

Explanation. Jeppesen A&P Powerplant Textbook 4-5.

Question Number. 25. In regard to using a turbine engine oil analysis program, which of the following is NOT true?.
Option A. It is best to start an oil analysis program on an engine when it is new.
Option B. A successful oil analysis program should be run over an engine's total operating life so that normal trends can be established.
Option C. Generally, an accurate trend forecast may be made after an engine's first oil sample analysis.
Correct Answer is. Generally, an accurate trend forecast may be made after an engine's first oil sample analysis.

Explanation. NIL.

Question Number. 26. Which of the following is the least likely indication of a main bearing failure?.
Option A. High oil consumption.
Option B. High oil temperature.
Option C. High oil pressure.
Correct Answer is. High oil pressure.

Explanation. Low oil pressure would indicate bearing failure not High!.

Question Number. 27. After shutdown, flames are present in the exhaust pipe. The probable cause is.

Option A. a defective fuel control unit (F.C.U).

Option B. a defective pressurizing and dump valve.

Option C. a defective H.P cock.

Correct Answer is. a defective pressurizing and dump valve.

Explanation. Jeppesen Gas Turbine Powerplant Page 7-56 refers.

Question Number. 28. If the L.P cock is used to shutdown an engine.

Option A. the F.C.U will continue to function.

Option B. flames will appear in the exhaust.

Option C. the H.P fuel pump will run dry.

Correct Answer is. the H.P fuel pump will run dry.

Explanation. The L.P cock is normally aircraft mounted. The engine will run until the H.P fuel pump runs dry.

Question Number. 29. When accelerating from 'light-up' to ground idling speed, the E.G.T will.

Option A. remain constant.

Option B. increase above idle value then decrease to normal.

Option C. decrease below idle value then increase to normal.

Correct Answer is. increase above idle value then decrease to normal.

Explanation. All Gas Turbines tend to overfuel until the RPM increases sufficiently to supply correct idle air flow.

Question Number.30.A gas turbine engine is stopped by closing.Option A.L.P cock.Option B.H.P cock.Option C.throttle valve.Correct Answer is.H.P cock.Explanation.Rolls Royce The Jet Engine Page 110 refers.

Question Number.31.A 'wet start' is indicated by.Option A.no temperature indication.Option B.low RPM.Option C.a prolonged cranking period.Correct Answer is.no temperature indication.Explanation.Due to lack of ignition.

Question Number.32.The engine accelerates to idling by.Option A.gas flow.Option B.combined efforts of starter motor and gas flow.Option C.starter motor.Correct Answer is.combined efforts of starter motor and gas flow.Explanation.NIL.

Question Number. 33. An oil emission spectrometer measures.

Option A. particles in suspension.

Option B. particles on the surface.

Option C. specific gravity of the oil.

Correct Answer is. particles in suspension.

Explanation. The colour of the spectrum produced upon burning the oil indicates parts per million of all metallic elements contained in the sample.

Question Number. 34. A broadband vibration reading indicates.

Option A. the total vibration sensed by the transducer.

Option B. the peak allowable vibration.

Option C. the N1 vibration.

Correct Answer is. the total vibration sensed by the transducer.

Explanation. Broadband is the total of all the vibrations sensed.

Question Number. 35. Vibration analysers determine which component is vibrating by analysing.
Option A. voltage.
Option B. amplitude.
Option C. frequency.
Correct Answer is. frequency.
Explanation. The faster the compressor shafts rotate the higher the frequency.

Question Number.36.High frequency vibration.Option A.causes engine components to crack.Option B.energises air particles prior to compression.Option C.can give an indication of a fluctuating (E.P.R).Correct Answer is.causes engine components to crack.Explanation.The more vibration cycles the nearer to failure the component will become.

Question Number. 37. Engine oil sampling analysis is taken.

Option A. after engine shut down.

Option B. at specific time after engine shut down.

Option C. when oil level is high.

Correct Answer is. at specific time after engine shut down.

Explanation. Jeppesen A&P Powerplant page 9-35 refers.

Question Number. 38. With external power applied, the engine will not run up to idle after reaching starting speed. The likely fault would be with the.

Option A. Fuel Control Unit.

Option B. clutch.

Option C. battery.

Correct Answer is. Fuel Control Unit.

Explanation. Once an engine has reached starter cut out speed the only thing that can stop it accelerating is underfuelling.

Question Number. 39. When running down an engine.
Option A. it should be done as slowly as possible to assist thermal stress.
Option B. it should be done as quickly as possible to stop excess of fuel gathering.
Option C. it should be done as slowly as possible to reduce thermal stress.
Correct Answer is. it should be done as slowly as possible to reduce thermal stress.

Explanation. Jeppesen Aircraft Gas Turbine Powerplant Page 14-2 refers.

Question Number. 40. What may be an indication of a bleed valve stuck in the closed position?.
Option A. Over speed.
Option B. Low E.G.T reading.
Option C. Compressor stalling at low RPM.
Correct Answer is. Compressor stalling at low RPM.

Explanation. A closed bleed valve at low RPM means the compressor has too much air to handle, hence it may stall or surge.

Question Number. 41. Excessive E.G.T can.

Option A. cause N.G.V to creep.

Option B. cause damage to turbine.

Option C. cause damage to jet pipe.

Correct Answer is. cause damage to turbine.

Explanation. The turbine is the highest stressed component in the engine.

Question Number. 42. A jet engine has a high oil temperature but all other power parameters are normal. The probable cause is.

Option A. a large quantity of oil being returned to tank.

Option B. gear box leakage.

Option C. a main bearing in distress.

Correct Answer is. a main bearing in distress.

Explanation. Oil systems cool as well as lubricate.

Question Number. 43. When cleaning salt from a compressor.

Option A. use water then manufacturer's cleaning solution.

Option B. use water at low power then water at high power.

Option C. never use water, use only the recommended solution.

Correct Answer is. use water at low power then water at high power.

Explanation. Jeppesen Aircraft gas turbine Powerplants Page 5-5 refers to desalination washes using water only.

Question Number. 44. A hot start refers to.

Option A. early ignition.

Option B. high E.G.T before idle RPM is achieved.

Option C. too much fuel being supplied.

Correct Answer is. high E.G.T before idle RPM is achieved.

Explanation. A hot start is defined as an overtemping of the engine as the engine starts. It may be caused by overfuelling, but not necessarily.

Question Number. 45. If a compressor surge occurs, it is recognized by.
Option A. coughing in the compressor and vibration.
Option B. fluctuating RPM and fuel flow.
Option C. fluctuating E.G.T and thrust.
Correct Answer is. coughing in the compressor and vibration.
Explanation. Whilst E.G.T and RPM will fluctuate, fuel flow will not and thrust cannot be measured. Therefore coughing and vibration is the correct answer.

Question Number. 46. Cracks may occur in hot section components of a turbine engine if they are marked during inspection with.

Option A. a lead pencil.

Option B. chalk.

Option C. layout dye.

Correct Answer is. a lead pencil.

Explanation. Graphite based markers can cause intergranular corrosion. See Jeppesen Gas Turbine Powerplants Page 5-31.

Question Number. 47. What must not be used during an engine compressor wash?.

Option A. Chlorine.

Option B. Desalinization solution.

Option C. Crushed almond.

Correct Answer is. Chlorine.

Explanation. By elimination b is correct. Crushed almond and desalination solutions are accepted compressor wash applications.

Question Number. 48. Trend monitoring of spectrometric oil analysis is carried out how often?.

Option A. During each scheduled maintenance period.

Option B. At set periods once the rate of wear has been established.

Option C. After every repair or modification.

Correct Answer is. At set periods once the rate of wear has been established.

Explanation. New components always wear more than when they are run in. SOAP monitoring periods depend on the component not on the aircraft servicing cycle.

Question Number. 49. Starting an engine with a bleed valve stuck closed would cause:.

Option A. low E.G.T.

Option B. possible stalling of the engine.

Option C. high E.G.T.

Correct Answer is. possible stalling of the engine.

Explanation. Bleed valves are normally open on start to prevent stalling.

Question Number.50.Galling is a condition caused by excessive.Option A.chafing.Option B.scoring.Option C.temperatures.Correct Answer is.chafing.Explanation.See Dale Crane - Dictionary of Aircraft Terms.

Question Number.51.If a burner was down, in a multi-can system, the engine would tendto..Option A.hang up.Option B.run up.Option C.surge.Correct Answer is.surge.

Explanation. If a combustor tube fails to ignite there will be a pressure build up at the entrance to that burner can.

Question Number. 52. If the rundown time is less than the minimum stated for a given engine.

Option A. unacceptable wear is occurring at the main bearings.

Option B. the rotating assembly is free.

Option C. the rotating assembly is being restricted.

Correct Answer is. the rotating assembly is being restricted.

Explanation. Failure to allow the engine to stabilise at idle after high power runs may cause the rotor to rub on the casing in older engines.

Question Number. 53. When running an engine the following lights should be on:.

Option A. anti-collision and nav-lights (if fitted).

Option B. nav-lights (if fitted).

Option C. anti-collision (if fitted).

Correct Answer is. anti-collision and nav-lights (if fitted).

Explanation. An anti-collision light is always fitted and turned on for ground running. If there are nav lights it makes sense to have them on as well.

Question Number. 54. With spectral oil analysis program (S.O.A.P), samples are taken.

Option A. when the oil tank is full.

Option B. at a specified interval.

Option C. when the oil is warm.

Correct Answer is. at a specified interval.

Explanation. SOAP samples are taken at routine servicing intervals as part of a preventative maintenance system.

Question Number.55.During start, if a bleed valve is stuck closed.Option A.E.G.T is unaffected.Option B.E.G.T will be higher than normal.Option C.E.G.T will be lower than normal.Correct Answer is.E.G.T will be lower than normal.Explanation.More air is passing through the engine than it should therefore it will be cooler.

Question Number. 56. Dynamic balance testing locates unbalance in.

Option A. all planes.

Option B. two planes.

Option C. one plane.

Correct Answer is. two planes.

Explanation. Dynamic balance is caused when the masses that are rotating are not equal and when the component parts, for example, propeller blades, are not tracking in the same plane.

Question Number. 57. On a gas turbine engine with baked oil deposits, how would you carry out grit blast cleaning With the engine at?.

Option A. stationary.

Option B. idle speed (low).

Option C. high speed.

Correct Answer is. idle speed (low).

Explanation. Compressor cleaning is done with the engine running using a variety if grits in a water solution.

Question Number. 58. A rotation pad on an accessory drive gear box is provided for.

- Option A. N2 rotation.
- Option B. both are correct.

Option C. alternate tachogenerator fitment.

Correct Answer is. N2 rotation.

Explanation. The rotation of the H.P compressor is required during borescope inspection.

Question Number. 59. What would be indicative of a hung start?.

Option A. Starter would fail to disengage.

Option B. High E.G.T.

Option C. Engine would fail to reach self sustaining speed.

Correct Answer is. Engine would fail to reach self sustaining speed.

Explanation. In a hung start the engine normally stagnates at or near the starter cut out and any attempt to accelerate the engine will result in a hot start.

15.22, Engine Storage and Preservation.

Question Number.1.Fuel system inhibiting oil is.Option A.mineral oil.Option B.light anti-freeze oil.Option C.kerosene.Correct Answer is.mineral oil.Explanation.C.A.I.Ps EL/3-14 refers to mineral oil.

| Question Num | ber. | 2. | After placing an engine in an M.V.P envelope. |
|---|-------|-----------|---|
| Option A. | check | humidit | y indicator after 12 hours. |
| Option B. | check | humidit | y indicator after 24 hours. |
| Option C. | check | humidit | y indicator after 48 hours. |
| Correct Answer is. check humidity indicator after 24 hours. | | | |
| Explanation. | Old C | .A.I.Ps 1 | eaflet EL/3-14 refers. |

Question Number.3.On a vapour proof cocoon, there is a.Option A.temperature indicator.Option B.moisture indicator.Option C.humidifier.Correct Answer is.moisture indicator.Explanation.C.A.I.Ps EL/3-14 refers.

Question Number. 4. When an installed engine is not to be used for a period of up to 7 days. Option A. it is necessary to inhibit the engine.

Option B. it is only necessary to blank off all apertures.

Option C. run the engine as prescribed in the Flight Manual.

Correct Answer is. it is only necessary to blank off all apertures.

Explanation. C.A.I.Ps EL/3-14.

Question Number.5.Installed engines must be re-preserved after preservation at least
every.Option A.six weeks.Option B.six days.Option C.six months.Correct Answer is.six months.Explanation.C.A.I.Ps EL/3-14.

Question Number.6.On storage of an engine, the desiccant is.Option A.looked at within 24 hrs if its blue its OK.Option B.looked at 24 hrs later if its blue its OK.Option C.looked at 24 hrs later if blue it should be replaced.Correct Answer is.looked at 24 hrs later if its blue its OK.Explanation.C.A.I.P's EL/3-14 (Engine Storage) refers. Note that answer a is partly correct, but you must also inspect the MVP envelope for damage or deterioration.

Question Number. 7. After placing an engine into storage, details would be recorded in.

Option A.Technical Log.Option B.Engine log book.Option C.Aircraft log book.Correct Answer is.Engine log book.Explanation.All engines have a log book.

Question Number. 8. When storing an engine the fuel system is to be inhibited. How is this done?.

Option A. Remove plugs rotate engine then add oil.

Option B. Rotate engine whilst adding oil then remove plugs.

Option C. Add oil leaving plugs in.

Correct Answer is. Remove plugs rotate engine then add oil.

Explanation. C.A.I.P's EL 3-14 (Engine storage)refers. This is a piston engine question but has been reported as being in a module 15 exam.

Question Number. 9. An engine in storage for 7 days should.

Option A. have storage oil placed in engine.

Option B. be run twice in that week.

Option C. be fitted with covers and blanks and apertures covered.

Correct Answer is. be fitted with covers and blanks and apertures covered.

Explanation. Old C.A.I.P's EL/3-4 refers.

Question Number. 10. On a (VP) cocoon bag, if the humidity indicator turns pink/lilac.

Option A. desiccant is effective and does not need changing.

Option B. desiccant is ineffective and needs changing.

Option C. desiccant is changed weekly.

Correct Answer is. desiccant is ineffective and needs changing.

Explanation. C.A.I.P's EL/3-4 refers

Question Number. 11. To inhibit the fuel system of an installed engine.

Option A. pump oil into the engine when stationary.

Option B. dry motor the engine.

Option C. remove the ignitor plugs.

Correct Answer is. dry motor the engine.

Explanation. C.A.I.P's EL 3-10 details this procedure. It is done by dry motoring the engine with a header tank of inhibiting oil connected to the inlet of the L.P fuel pump.

Question Number. 12. When is the humidity indicator checked on a preserved engine?.

Option A. 1 Month.

Option B. 1 Year.

Option C. 6 Months.

Correct Answer is. 1 Month.

Explanation. C.A.A.I.Ps leaflet 7-4 states 'approximately monthly intervals'. If the desiccant is pink the envelope must be opened, the desiccant replaced and the envelope resealed.

Question Number. 13. With an engine in storage, desiccant is used.

Option A. as an insecticide.

Option B. as a corrosion inhibitor.

Option C. to remove moisture from the air.

Correct Answer is. to remove moisture from the air.

Explanation. A&C Mechanics Handbook EA-AC65 page 389 refers.

Question Number.14.Small cuts in a M.V.P. engine storage bag can be repaired.Option A.with adhesive PVC tape.Option B.by vulcanising.Option C.by replacing M.V.P.Correct Answer is.with adhesive PVC tape.Explanation.NIL.

Question Number.15.When removing an engine for long-term storage, bleed valves should
be.Option A.removed.Option B.locked closed.Option C.open but blanked.Correct Answer is.open but blanked.Explanation.NIL.

<u>15.23.</u>

Question Number.1.The types of water present in aviation fuel are.Option A.free and entrained both harmful.Option B.free that is harmful and entrained that is harmless.Option C.free that is harmless and entrained that is harmful.Correct Answer is.free and entrained both harmful.Explanation.NIL.

Question Number.2.Oil pressure and scavenge pumps are usually.Option A.spur gear pumps.Option B.multi-plunger pumps.Option C.diaphragm pumps.Correct Answer is.spur gear pumps.Explanation.NIL.

Question Number. 3. The purpose of a pressure filter in a lubrication system is to.

Option A.protect the pressure pump.Option B.protect the oil jets.Option C.protect the scavenge pumps.Correct Answer is.protect the oil jets.Explanation.NIL.

Question Number. 4. a curvic coupling.
Option A. converts rotary motion to reciprocating motion.
Option B. absorbs misalignment between the driving and driven shafts.
Option C. accurately aligns the driving and the driven shafts.
Correct Answer is. accurately aligns the driving and the driven shafts.
Explanation. NIL.

Question Number.5.Feeders are.Option A.conduits used to carry electrical cable.Option B.fluid supply hoses.Option C.heavy duty electrical generator cables.Correct Answer is.heavy duty electrical generator cables.Explanation.NIL.

Question Number.6.High air humidity will.Option A.have no affect on thrust.Option B.reduce the thrust output.Option C.increase the thrust output.Correct Answer is.reduce the thrust output.Explanation.NIL.

Question Number.7.C.I.T sensor is made up of.Option A.Iron-constantan.Option B.Chromel-alumel.Option C.Platinum-rhodium.Correct Answer is.Platinum-rhodium.Explanation.NIL.http://www.megatron.co.il/Thermocouple.html

Question Number.8.What is the maximum value of pressure with reference to a jet
engine?.Option A.1 Bar.Option B.1 Kg/cm.Option C.1 Atmospheric Pressure.Correct Answer is.1 Atmospheric Pressure.Explanation.1 Atm. = 1.013 Bar.

Question Number.9.The hottest casing is the.Option A.H.PT.Option B.combustion chamber.Option C.L.PT.Correct Answer is.H.PT.Explanation.NIL.

Question Number.10.Centrifugal compressor maximum tip speed is.Option A.0.8 Mach.Option B.1.2 Mach.Option C.0.5 Mach.Correct Answer is.1.2 Mach.Explanation.NIL.

Question Number.11.What type of oil is used in a gas turbine engine?.Option A.Synthetic.Option B.Phosphate Ester.Option C.Mineral.Correct Answer is.Synthetic.