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This exam contains 72 questions

1. Propulsive efficiency is the ratio of useful power to the power input, this is also known as the ratio of.....

a. indicated HP to brake HP.
b. thrust HP to brake HP.
c. indicated HP to friction HP.

2. The ratio of the piston displacement and combustion chamber space is known as....

a. compression ratio.
b. mechanical efficiency.
c. volumetric efficiency.

3. In a 2 stroke engine the lubricating oil is mixed with fuel. What is the reason for this mixture?

a. The crankcase is a part of the inlet manifold and can not contain any oil.
b. It is necessary to burn the oil in the cylinder for extra heat.
c. It is not necessary to lubricate the gear case in a 2-stroke engine.

4. Which statement is correct regarding a four-stroke cycle aircraft engine?

The exhaust valve closes on the....

a. compression stroke.
b. inlet stroke.
c. outlet stroke.

5. What is the purpose of valve overlap?

a. Improve cooling.
b. Increase the amount of fuel/air mixture.
c. Both answers are correct.

6. The manifold pressure changes during engine operation. What is the cause for these changes?

a. The cause for changing the manifold pressure is air inlet temperature.
b. The cause for changing the manifold pressure is the position of the throttle valve. (engine speed)
c. The cause for changing the manifold pressure is the aircraft's attitude.

7. The greater the number and closer spacing of the power impulses reduce the vibrations set up in the crankshaft. When is this effect most effective?

This effect of more power pulses is most effective....

a. from idle to full power.
b. at low RPM.
c. at high RPM.

8. Brake Horsepower is:

a. Power measured with a brake.
b. Theoretical power in the cylinder.
c. Useful power at the propeller.

9. The measure of load expressed in pound-inches (lb-in) or pound feet (lb-ft) is known as....

a. work.
b. torque.
c. FHP (Friction Horse Power).

10. The result of the engine and propeller working together is called....

a. indicated horsepower.
b. thrust horsepower.
c. shaft horsepower.

11. The inlet valve opens before T.D.C, in the exhaust stroke to:

a. Induce a greater amount of mixture into the cylinder.
b. Reduce engine vibration.
c. Increase the pressure in the cylinder on completion of the induction stroke.

12. Operating flexibility is stated as....

a. ability of an engine to run smoothly at various RPM/load settings.
b. shape and size of an engine.
c. fuel consumption of an engine.

13. How can back-firing be caused in a reciprocating engine?

a. Damaged exhaust manifold.
b. Rich mixture.
c. Faulty valve clearance setting.

14. What is the best correction method to prevent after-firing?

a. Performing a compression test
b. Adjustment of the fuel/air mixture.
c. Adjust idle speed.

15. What type of connecting rod is shown in the picture?

a. Solid-type master rod.
b. Split-type master rod
c. Fork- and blade rod.

16. Which shaft is powering the Accessory Gearbox?

a. Cam shaft
b. Crank shaft
c. Prop shaft

17. Some aircraft engine manufacturers equip their product with choked or taper-ground cylinders in order to

a. provide a straight cylinder bore at operating temperatures.
b. flex the rings slightly during operation and reduce the possibility of the rings sticking in the grooves.
c. increase the compression pressure for starting purposes.

18. The length of the stroke is....

a. the distance between TDC and BDC.
b. equal to the length of the connecting rod.
c. determined by the size of the piston,

19. The purpose of two or more valve springs in aircraft engines is to

a. eliminate valve spring surge.
b. equalize valve face loading.
c. equalize side pressure on the valve stems.

20. What is the principal advantage of using propeller reduction gears?

a. To enable the engine RPM to be increased with an accompanying increase in power and allow the propeller to remain at a lower, more efficient RPM.
b. To enable the propeller RPM to be increased without an accompanying increase in engine RPM.
c. To enable the engine RPM to be increased with an accompanying increase in propeller RPM.

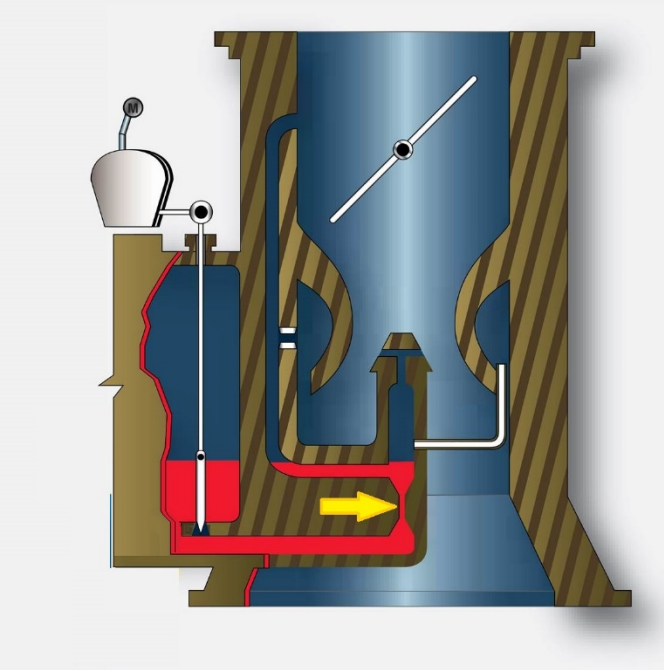
21. Weakening the mixture below the best fuel/air ratio will cause the engine power to:

a. Decrease.
b. Increase initially, but decrease below take off power.
c. Increase.

22. The economizer system in a float type carburettor.

a. functions only at cruise and idle speeds.
b. keeps the fuel/air ratio constant.
c. increases the fuel/air ratio at high power settings.

23. Which part of the picture is depicted with an arrow?



a. This is the main air bleed.
b. This the main metering jet.
c. This is the fuel discharge nozzle.

24. It may happen that ice forming occurs in aircraft engine carburettors. What is the effect on the manifold pressure in case ice builds up in a aircraft engine carburettor?

The manifold pressure of the aircraft engine....

a. increases.
b. does not change.
c. decreases.

25. State why ice build-up at high altitude is less commen than at low attitude.

a. At high altitude the speed of the airplane is more.
b. At high altitude is the power setting high.
c. At high altitude is less humidity in the air.

26. Fuel flow divider of an fuel injection systen of an aircraft engine are equiped with pistons to let the metered fuel pas through the fuel nozzles. How are thse pistons operated?

a. By a spring .
b. By a spring and the metered fuel.
c. By metered fuel.

27. A fuel strainer or filter on a fuel injection system must be located between the....

a. boost pump and engine driven fuel pump.
b. tank outlet and the fuel metering device.
c. boost pump and tank outlet.

28. A unit that keeps fuel under pressure and shuts off the individual nozzle lines when the control is placed in idle cut off is known as....

a. regulator section.
b. fuel metering section.
c. flow devider.

29. The picture shows a carburettor part, this part is?

a. Venturi tube
b. Throttle valve
c. Float chamber

30. The operation of a FADEC is:

a. a redundant system operation.
b. a single system operation.
c. a inter changeable system.

31. The fuel flow to a piston engine will vary according to:

a. The R.P.M, and the throttle position only.
b. The R.P.M, and the mixture setting only
c. The R.P.M., the throttle position and the mixture setting.

32. One of the functions of a FADEC on a reciprocating engine is?

a. Adjust the induction air temperature.
b. Adjust ignition timing.
c. Adjust engine oil pressure.

33. The ignition power at low RPM is very low. Therefore ignition timing must at engine start:

a. adjusted according engine conditions.
b. retarded.
c. advanced.

34. One of the functions of a crankshaft sensor on a reciprocating engine is?

a. Adjust the induction air temperature.
b. Check manifold pressure.
c. Sense crankshaft position for top-dead centre.

35. When using an electric starter motor, current usage....

a. is highest at the start of motor rotation.
b. remains relatively constant throughout the starting cycle.
c. is highest just before starter cut-off (at highest RPM).

36. When will the voltage in the secondary winding of a magneto, installed on a normally operating engine, be at its highest value?

a. Immediately after the breaker points close.
b. Just prior to spark plug firing.
c. Toward the latter part of the spark duration when the flame front reaches its maximum velocity

37. Using a cold spark plug in a high compression aircraft engine would probably result in

a. detonation.
b. a fouled plug.
c. normal operation.

38. What connects the ignition coil with the spark plug?

a. Low tension lead.
b. Ignition coil is in direct contact with the spark plug.
c. High tension lead.

39. How do cowl flaps aid in cooling a horizontally opposed aircraft engine?

a. Directs air through the engine cylinders.
b. Recirculates air through the engine cylinders.
c. Controls the amount of air flowing around the cylinders.

40. The engine is equipped with an exhaust. This type of exhaust is a?

a. Collector system
b. Short stack system
c. Augmenter system

41. Which of the following defects would likely cause a hot spot on a reciprocating engine cylinder?

a. A cooling fin broken off.
b. Cowling air seal leakage.
c. A cracked cylinder baffle.

42. Excessive heat is undesirable in any internal combustion engine for three principal reasons.

Which answer gives one of these reasons?

a. It does not affect the behaviour of the combustion of the fuel/air charge.
b. It harms lubrication.
c. It will harden engine parts and shortens their life.

43. To what altitude will a turbo charged engine maintain sea level pressure?

a. Service ceiling.
b. Critical altitude.
c. Pressure altitude.

44. Turbo compound turbines used on some reciprocating engines are driven by the

a. compression of the exhaust gases.
b. crankshaft.
c. exhaust gas energy.

45. Compared to Naturally aspirated engines, normalizer turbo charged engines exhaust system operates at....

a. similar temperature and pressure.
b. similar temperature and higher pressure.
c. higher temperature and higher pressure.

46. In a ground boosted engine the supercharged pressure must be at least above:

a. 40 "HG.
b. 50 "HG.
c. 30 "HG.

47. What is the purpose of a turbocharger system for a small reciprocating aircraft engine?

a. Compresses air to maintain manifold pressure constant from sea level to the critical altitude of the engine.
b. Maintains constant air velocity in the intake manifold.
c. Compresses the air to hold the cabin pressure constant after the aircraft has reached its critical altitude.

48. Specific Fuel Consumption (S.F.C.)

a. Becomes greater as the efficiency of the engine improves
b. Is the weight of fuel used by an engine per unit horse power per unit time.
c. Increases in proportion to the thermal efficiency.

49. 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?

a. The oil pressure will be lower than normal.
b. The oil pressure will be higher than normal.
c. The oil temperature and oil pressure will be higher than normal.

50. What type of oil do most engine manufacturers recommend for new reciprocating engine break in?

a. Ash less dispersant oil.
b. Semi synthetic oil.
c. Straight mineral oil

51. The use of octane in aviation fuel is to:

a. to increase the specific weight.
b. prevent detonation.
c. prevent a vapour lock.

52. What is likely to occur if a reciprocating engine is operated at high power settings before it is properly warmed up?

a. Oil starvation of bearings and other parts.
b. Accelerated oil breakdown and oxidation.
c. Excessive thinning of the engine oil.

53. The floating control thermostat, used on some reciprocating engine installations, helps regulate oil temperature by

a. controlling oil flow through the oil cooler.
b. recirculating hot oil back through the sump.
c. controlling air flow through the oil cooler.

54. When large metallic particles are found in the oil filter during an inspection,

a. the cause should be identified and corrected before the aircraft is released for flight.
b. it is an indication of normal engine wear, no action required, unless the deposits on the metallic chip detector exceeds a specified amount.
c. it is an indication of normal engine wear unless the particles are nonferrous.

55. LSA (Light Sports Aircraft) Aircraft engine oil tanks are equipped with oil quantity indication. What type of indicators is mostly used (on these small aircraft)?.

a. An oil tank side gauge.
b. A dipstick.
c. A quantity indicator system with a float mechanism.

56. In most aircraft reciprocating engines cooling is provided by means of using....

a. coolant fluid.
b. a combination of coolant fluid and air.
c. air.

57. Thermocouple leads

a. are designed for a specific installation and may not be altered.
b. may be installed with either lead to either post of the indicator.
c. may be repaired using solderless connectors.

58. A manifold pressure gauge is designed to

a. indicate differential pressure between the intake manifold and atmospheric pressure.
b. maintain constant pressure in the intake manifold.
c. indicate absolute pressure in the intake manifold.

59. Commercial operators use the Quick Engine Change Assembly. What does this QECA mean?

a. The QECA are the necessary engine accessories required for installation on the engine.
b. The QECA is essential the power plant and necessary accessories installed on the engine.
c. The QECA is essential the power plant without the necessary accessories installed on the engine.

60. The cleaning of different type of air filters is important. So....

a. each user has his own cleaning procedures.
b. all filters have the same procedure to overcome faulty procedures.
c. each type of air filter has his own cleaning procedure.

61. On modern dynafocal engine mounts, the pads are mounted so that they are:

a. support the engine to be static in balance.
b. reducing vibrations.
c. support the engine to be dynamic in balance.

62. One of the items in the engine shut-down procedures is the position of the engine cawling flaps. What should the position of the cowling flaps normally be?

During engine shut down the position of the cowling flaps is....

a. full open.
b. not an item .
c. full closed.

63. Proper engine warm up is important particularly when the condition is unknown. Therefore throttle up to a higher stable RPM is allowed as soon....

a. there is oil pressure.
b. the engine start running.
c. the oil indicates temperature rise.

64. A hissing sound from the exhaust stacks when the propeller is being pulled through manually indicates

a. exhaust valve blow-by.
b. worn piston rings.
c. a cracked exhaust stack.

65. Which of the following would indicate a general weak-engine condition when operated with a fixed-pitch propeller or test club?

a. Manifold pressure lower at idle RPM than at static RPM.
b. Lower than normal manifold pressure for any given RPM.
c. Lower than normal static RPM, full throttle operation.

66. During an engine start-up, a backfire is indicated. What does this indication mean?

a. This indication means that the exhaust is not clear.
b. This indication means that the mixture is to lean.
c. This indication means that there is older fuel used.

67. What is the purpose of a power check on a reciprocating engine?

a. To determine if the fuel/air mixture is adequate.
b. To check magneto drop.
c. To determine satisfactory performance.

68. If an engine cylinder is to be removed, at what position in the cylinder should the piston be?

a. Halfway between top and bottom dead centre.
b. Top dead centre.
c. Bottom dead centre.

69. During overhaul, the disassembled parts of an engine are usually degreased with some form of mineral spirits solvent rather than water-mixed degreasers primarily because....

a. water-mixed degreaser residues may cause engine oil contamination in the overhauled engine.
b. water-mixed degreasers are less aggressive..
c. solvent degreasers are much more effective.

70. Grinding the valves of a reciprocating engine too thin is likely to result in....

a. normal operation and long life.
b. pre-ignition and burned valves.
c. excessive valve clearance.

71. Why should used-engines in storage be protected against internal corrosion?

a. The normal combustion creates corrosive by-products and can corrode the internal engine during storage
b. If the engine is proper stored (no humidity can enter the internal engine) there is no need for engine preservation.
c. Used engines are not prone to corrosion, the oil system protects the engine against internal corrosion. No additional protection is required

72. Special care should be taken during the de-preservation of an engine. What has to be done with the preservation oil?

a. It is not necessary to remove the preservation oil. It burns during the engine test-run.
b. It is necessary to remove the preservation oil by dismanteling the engine and cleaning all engine parts.
c. It is necessary to remove the preservation oil and service the engine with oil in accordance with the manufacturer's instruction.