

16/2015

Maximum : 100 marks

Time : 1 hour and 15 minutes

1. A thermodynamic system which allows transfer of energy and not allows transfer of mass is called :
  - (A) Isolated system
  - (B) Semi closed system
  - (C) Closed system
  - (D) Open system
  
2. Unit of pressure in SI system :
  - (A) Pascal
  - (B) Kelvin
  - (C) Newton
  - (D) Bar
  
3. "If two thermodynamic systems A & B are in thermal equilibrium with a third system C, then A & B are in thermal equilibrium with each other". This statement is called :
  - (A) Zeroth Law of Thermodynamics
  - (B) First law of Thermodynamics
  - (C) Second law of Thermodynamics
  - (D) Clausius statement
  
4. Compression ignition engines are called diesel engines because :
  - (A) Diesel oil is used as fuel
  - (B) Used in marine applications
  - (C) Diesel oil is cheaper fuel
  - (D) It was invented by Rudolph diesel
  
5. What is compression ratio?
  - (A)  $\frac{\text{Stroke volume} - \text{Clearance volume}}{\text{Clearance volume}}$
  - (B)  $\frac{\text{Stroke volume}}{\text{Clearance volume}}$
  - (C)  $\frac{\text{Intake Pressure}}{\text{Exhaust Pressure}}$
  - (D)  $\frac{\text{Compression Pressure}}{\text{Suction Pressure}}$

6. The Diesel cycle consists of :
- (A) Adiabatic compression → Constant volume heat addition → Adiabatic expansion → Constant volume heat rejection
  - (B) Isothermal compression → Constant volume heat addition → Isothermal expansion → Constant volume heat rejection
  - (C) Adiabatic compression → Constant pressure heat addition → Adiabatic expansion → Constant volume heat rejection
  - (D) Isothermal compression → Constant pressure heat addition → Isothermal expansion → Constant pressure heat rejection
7. Among the four components given below, identify the one, which is not a part of diesel engine :
- (A) Air filter
  - (B) Carburetor
  - (C) Fuel injector
  - (D) Intake valve
8. Among the four types of engines given below, which will have largest fly wheel :
- (A) Two stroke petrol engine
  - (B) Two stroke diesel engine
  - (C) Four stroke petrol engine
  - (D) Four stroke diesel engine
9. In I.C. engines the reciprocating motion is converted to rotary motion by the :
- (A) Crank mechanism
  - (B) Piston
  - (C) Cylinder head
  - (D) Cylinder wall
10. A turbo charger :
- (Hint : Size refers to cylinder volume)
- (A) Increase the power without increasing the size of the engine
  - (B) Increase the power and size
  - (C) Has no effect in power and size
  - (D) May increase power and size
11. An exhaust valve can be identified as :
- (A) The valve diameter is less than or equal to intake valve
  - (B) The face and seat are coated with wear and corrosion resistant alloy
  - (C) All of the above
  - (D) None of the above
12. An I.C. engine with 6 cylinders will have :
- (A) 6 main bearings
  - (B) 7 main bearings
  - (C) 5 main bearings
  - (D) 12 main bearings
13. Large high power engines used for ships are :
- (A) Four stroke petrol engine
  - (B) Four stroke diesel engine
  - (C) Two stroke petrol engine
  - (D) Two stroke diesel engine

14. In large high power marine engines a cross head is used to connect :  
(A) Piston to piston rod (B) Piston rod to connecting rod  
(C) Cylinder head to engine frame (D) Connecting rod to crank shaft
15. The ratio of brake horse power to indicated horse power is called :  
(A) Volumetric efficiency (B) Thermal efficiency  
(C) Power efficiency (D) Mechanical efficiency
16. The tendency of a force to rotate an object about an axis is called :  
(A) r.p.m. (B) Centrifugal force  
(C) Torque (D) Horse power.
17. The actual power developed inside the cylinder is called :  
(A) brake power (B) indicated power  
(C) shaft power (D) rated power
18. Reversible engines are commonly used in :  
(A) large marine vessels (B) air plane propulsion systems  
(C) automobiles (D) none of the above
19. In a transmission gear box, the number of teeth in the driving gear is 38. To rotate the output shaft at half of the rpm of driving shaft, the number of teeth required in the driven gear is :  
(A) 19 (B) 38  
(C) 76 (D) 152
20. The bearing to support the propeller shaft is :  
(A) Plummer block (B) Main bearing  
(C) Big end bearing (D) Thrust bearing
21. Select the fuel with highest L.C.V. (lower calorific value) from the options :  
(A) Petrol (B) Diesel  
(C) L.N.G. (D) Kerosene
22. Autoignition temperature of a substance is the lowest temperature at which it will spontaneously ignite in normal atmosphere without an external source of ignition. Among the commonly used fuels, ————— has the lowest autoignition temperature.  
(A) Kerosene (B) Petrol  
(C) Coal (D) Diesel oil

23. The expanded form of CRDI is :
- (A) Common Rear engine Diesel Injection
  - (B) Common Rail Direct Injection
  - (C) Computerized Direct Injection
  - (D) Common Range Diesel Injection
24. Fuel service tank → fuel feed pump → \_\_\_\_\_ → fuel injector.
- (A) Fuel purifier
  - (B) Fuel filter
  - (C) Fuel cooler
  - (D) Fuel injection pump
25. The fuel quantity to be injected to the cylinder is controlled by the movement of \_\_\_\_\_ of the fuel injection pump.
- (A) Barrel
  - (B) Delivery valve
  - (C) Compression spring
  - (D) Helical groove
26. Example for solid lubricant :
- (A) Paint
  - (B) Vegetable oil
  - (C) Graphite
  - (D) None of these
27. Lubricating oil priming pump is used for :
- (A) Lubricate the engine parts before starting
  - (B) Lubricate the engine parts after starting
  - (C) Lubricate the engine parts during running
  - (D) Lubricating the main lub. oil pump
28. Choose the option which is NOT the purpose of a lubricating oil :
- (A) Cleaning of parts
  - (B) Oxidizing the engine parts
  - (C) Cooling of engine parts
  - (D) Prevention of corrosion
29. Lubrication system suitable for small engines :
- (A) forced lubrication
  - (B) periodical lubrication
  - (C) solid lubrication
  - (D) splash lubrication
30. SAE 15 W-40 is one of the grades used in lubricating oil. The "W" stands for :
- (A) Water
  - (B) Winter
  - (C) Wet Sump
  - (D) White
31. Fins are used in Air Cooled IC engines :
- (A) To increase the cooling area
  - (B) To reduce weight
  - (C) To get attractive shape to engine
  - (D) To keep engine dry

32. The coolant used in CI engine cooling system should be :
- (A) Acidic (B) Neutral  
(C) Alkaline (D) Scale forming
33. The thermostatic valve in the cooling system is used to :
- (A) Maintain the engine in the maximum efficient temperature  
(B) To cool the engine  
(C) To control the engine speed  
(D) To by pass the cooling water
34. Most suitable cooling system for a marine engine is :
- (A) Air cooling system  
(B) Oil cooling system  
(C) Direct sea water cooling system  
(D) Indirect sea water cooling system
35. An intercooler is :
- (A) To cool the engine body  
(B) To reduce the temperature of suction air  
(C) To cool the cooling water  
(D) To cool the cabin
36. Muffler is used in the exhaust system for :
- (A) connecting exhaust manifold and exhaust gas piping  
(B) filtering out heavy particles  
(C) the reduction of harmful emissions  
(D) reducing the noise
37. The colour of the exhaust is black. Then the engine is :
- (A) Having perfect combustion  
(B) Having lubricating oil leaking to combustion chamber  
(C) Having incomplete combustion  
(D) Having cooling water leakage into the combustion chamber
38. The component that is designed to maintain a constant engine speed irrespective of load variation :
- (A) Fuel injection pump (B) Governor  
(C) Fuel injector (D) Safety valve

39. Very large diesel engines are started using :
- (A) Compressed air
  - (B) Electric starter motor
  - (C) Hydraulic starter motor
  - (D) Hand cranking
40. The one way clutch (overrunning clutch) is used in starter motors to :
- (A) Automatically engage the starter pinion to flywheel
  - (B) To disconnect the engine from gearbox before starting
  - (C) Disengage flywheel from starter pinion after starting
  - (D) Disengage engine from propeller shaft
41. The Safeway to connect starter battery terminals on board ship is :
- (A) connect positive terminal first, then negative terminal
  - (B) connect negative terminal first, then positive terminal
  - (C) connect positive and negative terminals simultaneously
  - (D) all are safe
42. The lead-acid battery rooms to be well ventilated to avoid fire hazards, because of :
- (A) chances of acid leakage
  - (B) emission of oxygen gas
  - (C) chances of spark
  - (D) emission of hydrogen gas
43. Open circuit voltage of a single cell of lead acid battery is :
- (A) 1.1 volts
  - (B) 2.1 volts
  - (C) 12 volts
  - (D) 24 volts
44. Alternating voltage is generated by :
- (A) Rotating a coil in the magnetic field
  - (B) Rotating a magnetic field within a stationery coil
  - (C) Both A and B are correct
  - (D) Both A and B are wrong
45. The voltage generated in an alternator depends on :
- (A) The number of term in the coil
  - (B) Strength of magnetic field
  - (C) The speed of rotation of the alternator
  - (D) All of the above
46. The purpose of capacitor of a single phase induction motor is :
- (A) to increase efficiency
  - (B) for starting
  - (C) to cool the motor
  - (D) to reduce the weight of the motor

47. The C.I. engine pistons are generally made of :  
(A) Aluminium alloy (B) Stainless steel  
(C) Copper (D) Silver
48. White metal is an alloy used in diesel engines to manufacture :  
(A) Connecting rod bolts (B) Exhaust valve  
(C) Main bearing (D) Engine body
49. Cylinder liners are subjected to extreme heat of combustion and it has to permit the piston and piston rings with minimum friction. The material suitable for making liners is :  
(A) Heat resistant steel (B) Close grained cast iron  
(C) Copper Alloy (D) Cast Aluminium
50. Valve clearance or tappet clearance is provided to :  
(A) Allow thermal expansion of valve mechanism  
(B) Reduce noise  
(C) Increase thermal efficiency  
(D) Reduce wear and tear of valve mechanism
51. Butt clearance or piston ring end gap is the distance between the ends of piston ring :  
(A) kept on a plane surface  
(B) at the time of manufacture  
(C) inserted inside the cylinder  
(D) stretched with a specific amount of force
52. Which is to be checked 'daily' to ensure trouble free running of a diesel engine?  
(A) Tappet clearance (B) Crank shaft deflection  
(C) Lubricating oil properties (D) Crank case lubricating oil level
53. Most suitable maintenance system suitable for efficient running of diesel engine plant is :  
(A) advance maintenance system (B) break down maintenance system  
(C) continues maintenance system (D) planned maintenance system
54. A four stroke six cylinder in line compression ignition engine is running at 400 rpm. Then the engine camshaft is running at :  
(A) 200 (B) 300  
(C) 400 (D) 800
55. A tachometer is a device used for measuring :  
(A) Wind speed (B) Deflection  
(C) Speed to rotation (D) Fuel consumption