

[Power Plant Engineering MCQ PDF Download](#)

1. Western U.P, Rajasthan, Punjab, Haryana, Tamil Nadu are quite suitable areas for

- (a) hydroelectric power plants.
- (b) steam power plants.
- (c) nuclear power plants.
- (d) all of the above.

Answer: (c) nuclear power plants.

2. One atomic mass unit (amts) is approximately equal to

- (a) 1.66×10^{-24} kg
- (b) 1.66×10^{27} kg
- (c) 1.6×10^{19} kg
- (d) 1.6×10^{-13} kg

Answer: (b) 1.66×10^{27} kg

3. One atomic mass unit is equivalent to

- (a) 931.4 Mev.
- (b) 251.2 Mev.
- (c) 120.4 Mev.

Answer: (a) 931.4 Mev.

4. One kilogram of natural uranium gives energy equivalent to about

- (a) 100 kg of coal.
- (b) 1,000 kg of coal
- (c) 5,000 kg of coal.
- (d) 10,000 kg of coal.

Answer: (d) 10,000 kg of coal.

5. Generation of one watt needs about.....fissions per second.

- (a) 3.1
- (b) 3.1×10^6
- (c) 3.1×10^7
- (d) 3.1×10^{10}

Answer: (d) 3.1×10^{10}

6. Particles having the same atomic numbers but different mass numbers are called the

- (a) beta particles.
- (b) decayed particles.
- (c) isotopes.

(d) neutrons.

Answer: (c) isotopes.

7. In a nuclear reactor thermal energy is obtained from

(a) fission of radioactive materials.

(b) fusion of radioactive materials.

(c) Burning of the fuel rods in oxygen.

Answer: (a) fission of radioactive materials.

8. Nuclear reactors usually employ

(a) fission.

(b) fusion.

(c) both fission and fusion.

(d) none of the above.

Answer: (a) fission.

9. In nuclear chain fission reaction each neutron causing fission produces

(a) no new neutron.

(b) less than one new neutron.

(c) one new neutron.

(d) at least one new neutron.

Answer: (d) at least one new neutron.

10. Which of the following is not a secondary nuclear fuel ?

- (a) Pu_{239}
- (b) U_{233}
- (c) U_{235}
- (d) none of above.

Answer: (c) U_{235}

11. Which of the following are the fertile materials ?

- (a) U_{238} and Th_{232}
- (b) U_{238} and Th_{239}
- (c) U_{233} and Pu_{239}
- (d) U_{238} and Pu_{239}

Answer: (a) U_{238} and Th_{232}

12. Which of the following are the fissile materials ?

- (a) U_{238} and Th_{232}
- (b) U_{235} , U_{233} and Pu_{239}
- (c) U_{235} and Th_{239}
- (d) None of the above.

Answer: (b) U_{235} , U_{233} and Pu_{239}

13. In the nuclear fission reactions, isotope of uranium used is

(a) U_{234}

(b) U_{235}

(c) U_{233}

(d) U_{238}

Answer: (c) U_{233}

14. When a nuclear reactor is operating at constant power the multiplication factor

(a) is equal to unity.

(b) is less than unity.

(c) is greater than unity.

(d) may be any of the above.

Answer: (a) is equal to unity.

15. One fission of U_{235} releases energy of

(a) 335 MeV

(b) 200 MeV

(c) 430 MeV

(d) 525 MeV

Answer: (b) 200 MeV

16. Which of the following statements are correct ?

1. Nuclear fission occurs whenever a uranium nucleus reacts with a neutron.
2. Nuclear fission is accompanied by the release of neutrons and gamma rays.
3. About 200 MeV of energy is released in the fission of a uranium nucleus.
4. Energy from the fission of uranium nucleus is released mainly as the kinetic energy of the neutrons and the energy of gamma radiations.

Select the correct answer using the codes given below. Codes:

- (a) 1, 2, 3 and 4.
- (b) 2 and 3.
- (c) 2, 3 and 4.
- (d) 1 and 4.

Answer: (a) 1, 2, 3 and 4.

17. In what form the initial energy will be released for the 200 MeV per fission by a neutron in a slow thermal nuclear reactor?

- (a) Heat energy.

(b) Electromagnetic radiation.

(c) Kinetic energy of particles and electromagnetic radiation.

(d) Kinetic and sound energy.

Answer: (c) Kinetic energy of particles and electromagnetic radiation.

18. The operation of a nuclear reactor is controlled by controlling the multiplication factor (k), defined as

$K = \text{Number of neutrons of any one generation} \div \text{Number of neutrons of immediately preceding generation}$

The power level of the reactor can be increased by

(a) raising the value of k above 1 and, keeping it at that raised value.

(b) raising the value of k above 1, but later bringing it back to $k = 1$.

(c) lowering the value of k below 1 and keeping at that lowered value.

(d) lowering the value of k below 1, but later bringing it back to $k = 1$.

Answer: (b) raising the value of k above 1, but later bringing it back to $k = 1$.

19. Critical mass of the fuel is the amount required to make the multiplication factor

(a) less than unity.

(b) more than unity.

(c) equal to unity.

(d) 0.5

Answer: (c) equal to unity.

20. The power output of a nuclear power station is proportional to

(a) the rate at which fission reaction occurs

(b) square root of the rate at which fission reaction occurs.

(c) square of the rate at which fission reaction occurs.

(d) none of the above.

Answer: (a) the rate at which fission reaction occurs

21. The function of moderator in a nuclear reactor is

(a) to absorb the excess neutrons.

(b) to increase the energy of the neutrons.

(c) to slow down the neutrons.

Answer: (c) to slow down the neutrons.

22. A moderator material should have

(a) small atomic mass.

(b) large atomic mass.

(c) none of the above.

Answer: (a) small atomic mass.

23. Graphite is used in nuclear power plant as a

(a) fuel.

(b) coolant.

(c) moderator.

(d) electrode.

Answer: (c) moderator.

24. Which of the following materials cannot be used as a moderator ?

(a) Deuterium.

(b) Graphite.

(c) Heavy water.

(d) Beryllium.

Answer: (a) Deuterium.

25. Consider the following moderators used in nuclear reactors:

1. Graphite.

2. Beryllium.

3. Heavy water.

Their correct sequence in increasing order of their neutron absorption cross section is

(a) 1, 3, 2.

(b) 2, 1, 3.

(c) 3, 1, 2.

(d) 3, 2, 1.

Answer: (d) 3, 2, 1.

26. Which material is used in controlling chain reaction in a nuclear reactor ?

(a) Thorium.

(b) Heavy water.

(c) Boron.

(d) Beryllium.

Answer: (c) Boron.

27. Control rods used in nuclear reactors are made of

(a) zirconium.

(b) boron.

(c) beryllium.

(d) lead.

Answer: (b) boron.

28. In a nuclear reactor, chain reaction is controlled by introducing

(a) iron rods.

(b) cadmium rods.

(c) graphite rods.

(d) brass rods.

Answer: (b) cadmium rods.

29. Heavy water is used in nuclear power plant as

(a) fuel.

(b) coolant.

(c) reflector.

(d) moderator.

(e) shield.

(f) both (b) and (d)

Answer: (f) both (b) and (d)

30. Which of the following materials can be used as a coolant ?

- (a) Heavy water.
- (b) CO₂
- (c) Helium.
- (d) Any of the above.

Answer: (d) Any of the above.

31. The function of reflector in a nuclear reactor is to

- (a) bounce back most of the neutrons that escape from the fuel core.
- (b) reduce the speed of the neutrons.
- (c) stop the chain reaction.
- (d) all of the above.

Answer: (a) bounce back most of the neutrons that escape from the fuel core.

32. Reflectors of a nuclear reactor are made of

- (a) cast iron.
- (b) beryllium.
- (c) steel.
- (d) boron.

Answer: (b) beryllium.

33. Thermal shielding is provided to

- (a) absorb the fast neutrons.
- (b) protect the operating personnel from exposure to radiations.
- (c) prevent the reactor wall from getting heated.
- (d) all of the above.

Answer: (d) all of the above.

34. The radiation shield for a nuclear power reactor for biological safety is provided by having the reactor:

- (a) immersed in water pool.
- (b) encased by thick metal walls.
- (c) encased by thick concrete wall.
- (d) isolated from outside world with strong magnetic fields.

Answer: (c) encased by thick concrete wall.

35. In boiler water reactor (BWR)

- (a) the feed water acts both coolant and a moderator.
- (b) enriched uranium is used as fuel.
- (c) there is a danger of radioactive contamination of steam.
- (d) all of the above.

Answer: (d) all of the above.

36. Tarapur atomic power station has

- (a) CANDU type reactors.
- (b) boiling water reactors.
- (c) pressurized water reactors.
- (d) gas cooled reactors.

Answer: (b) boiling water reactors.

37. The thermal efficiency of a boiler water reactor is.....that of a pressurized water reactor.

- (a) greater than.
- (b) equal to.
- (c) less than

Answer: (a) greater than.

38. In a pressurized water reactor (PWR)

- (a) light or heavy water is used as both coolant and moderator.
- (b) water is used at high pressure (as high as 140 kg/cm²) so that it is available in liquid form at about 280°C.
- (c) the coolant water boils in the reactor core.
- (d) both (a) and (b).

Answer: (d) both (a) and (b).

39. A CANDU reactor uses

- (a) highly enriched uranium as fuel and light water as moderator and coolant.
- (b) natural uranium as fuel and heavy water as moderator and coolant.
- (c) enriched uranium as fuel and ordinary water as moderator and cooler.
- (d) only fertile material.

Answer: (b) natural uranium as fuel and heavy water as moderator and coolant.

40. Which one of the following is employed as a moderator by CANDU type of slow thermal nuclear reactors?

- (a) Water.
- (b) Heavy water.
- (c) Graphite.
- (d) Beryllium.

Answer: (b) Heavy water.

41. Which one of the following fuels is used by the slow thermal nuclear reactors for power generation?

- (a) U_{235}
- (b) U_{238}

(c) Th_{232}

(d) Pu_{239}

Answer: (a) U_{235}

42. Consider the following statements regarding the nuclear power plants:

1. A thermal reactor needs a moderator material.
2. In a nuclear reactor, multiplication factor is kept almost equal to one.
3. Nuclear power plants are used as peak load plants only.

Which of the statements given above are correct?

(a) 1, 2 and 3.

(b) 1 and 2 only.

(c) 2 and 3 only.

(d) 1 and 3 only.

Answer: (b) 1 and 2 only.

43. In a thermal nuclear reactor

1. the purpose of moderator is to slowdown fast neutrons produced due to fission.
2. the moderator material must have low molecular weight.

3. ordinary water can be used as moderator with natural uranium as fuel.

4. the multiplication factor is kept slightly greater than unity during its normal functioning.

Of these statements

(a) 1 and 3 are correct.

(b) 3 and 4 are correct.

(c) 1, 2 and 3 are correct.

(d) 1, 2 and 4 are correct.

Answer: (d) 1, 2 and 4 are correct.

44. A heavy water reactor

(a) has higher neutron flux which can be produced at a given power level.

(b) requires less time to shutdown than in the case of graphite because of photo-neutron production.

(c) is not stable.

(d) cannot use natural uranium as fuel.

Answer: (a) has higher neutron flux which can be produced at a given power level.

45. The conversion ratio of a breeder reactor is

- (a) less than unity.
- (b) more than unity.
- (c) equal to unity.
- (d) none of the above.

Answer: (b) more than unity.

46. Fast breed reactors are best suited for India owing to

- (a) large thorium deposits.
- (b) large plutonium deposits.
- (c) large uranium deposits.
- (d) none of the above.

Answer: (a) large thorium deposits.

47. Gas cooled reactor

- (a) uses CO₂ or helium as coolant and graphite as the moderator.
- (b) uses coolant at pressure of 14 - 28 kg/cm² and at temperature of 700 - 800°C.
- (c) uses heavy water as coolant as well as moderator.
- (d) both (a) and (b).

Answer: (d) both (a) and (b).

48. A sodium graphite reactor uses

- (a) sodium as moderator and graphite as coolant.
- (b) sodium as coolant and graphite as moderator.
- (c) a mixture of sodium and graphite as coolant.
- (d) a mixture of sodium and graphite as moderator.

Answer: (b) sodium as coolant and graphite as moderator.

49. The economic prospects of nuclear power generation in India to a great extent depends on successful development of

- (a) fast reactors using enriched uranium as the fuel thus avoiding import of heavy water.
- (b) thermal reactors using natural uranium as the fuel and avoiding import of enriched uranium.
- (c) breeder reactors using thorium as blanket material and U_{233} as the fuel.
- (d) reactor using plutonium as the fuel, natural uranium as blanket and liquid sodium as the coolant.

Answer: (c) breeder reactors using thorium as blanket material and U_{233} as the fuel.

50. Compared to steam engines, the internal combustion engines have

- (a) much higher thermal efficiency.
- (b) almost same thermal efficiency as that of steam engines.
- (c) much lower thermal efficiency.
- (d) can have lower or higher thermal efficiency.

Answer: (a) much higher thermal efficiency.

51. The lubrication cost in a diesel power plant is

- (a) high.
- (b) moderate.
- (c) low.

Answer: (a) high.

52. Which of the following statements is True ?

- (a) Diesel power plants employ only four stroke engines.
- (b) Space requirement for diesel power plants is more than that for a conventional steam power plant.
- (c) A two stroke engine develops more power for the same speed and piston displacement.
- (d) The specific fuel consumption of a diesel power plant decreases with the decrease in load.

Answer: (c) A two stroke engine develops more power for the same speed and piston displacement.

53. The diesel engines are available in sizes from

- (a) 0 - 5 kW
- (b) 5 - 50 kW
- (c) 75 - 3,750 kW
- (d) above 10,000 kW

Answer: (c) 75 - 3,750 kW

54. The compression ratio in diesel engine may be in the range of

- (a) 15 - 20
- (b) 10 - 15
- (c) 5 - 10
- (d) 3 - 5

Answer: (a) 15 - 20

55. Air standard efficiency of a diesel engine depends upon

- (a) expansion ratio.
- (b) compression ratio.
- (c) fuel used.

(d) none of the above.

Answer: (b) compression ratio.

56. In case of diesel engines, the thermal efficiency is in the range of

(a) 10 - 20 percent.

(b) 20 - 30 percent.

(c) 30 - 40 percent.

(d) 40 - 50 percent.

Answer: (c) 30 - 40 percent.

57. In ideal diesel cycle the working substance is

(a) air.

(b) diesel.

(c) mixture of air and diesel.

(d) any combustible gas.

Answer: (a) air.

58. Air-fuel ratio required for combustion in diesel engine is around

(a) 20 : 1

(b) 15 : 1

(c) 10 : 1

(d) 5 : 1

Answer: (b) 15 : 1

59. In a diesel engine fuel is injected at a pressure of

(a) 20 - 25 kg/cm²

(b) 50 - 75 kg/cm²

(c) 90 - 130 kg/cm²

(d) 130 - 160 kg/cm²

Answer: (c) 90 - 130 kg/cm²

60. Maximum temperature developed in a diesel engine cylinder is in the range of

(a) 2,000 - 2,500°C

(b) 1,500 - 2,000°C

(c) 1,000 - 1,500°C

(d) 800 - 1,000°C

Answer: (a) 2,000 - 2,500°C

61. In a diesel engine, the heat lost to the cooling water is about

(a) 50%

(b) 30%

(c) 20%

(d) 15%

Answer: (b) 30%

61. The highest proportion of total heat supplied to a diesel engine goes to

(a) useful output.

(b) heat lost to exhaust gases.

(c) heat lost to cooling water.

(d) heat lost to friction, windage and radiation losses.

Answer: (a) useful output.

62. Which of the following diesel engines have minimum air consumption per BHP ?

(a) 2 stroke, air injection.

(b) 4 stroke, air injection.

(c) 4 stroke, mechanical injection.

(d) All of the above have almost equal air consumption.

Answer: (c) 4 stroke, mechanical injection.

63. Heating value of diesel oil is around

- (a) 4,000 kcals/kg.
- (b) 10,000 kcals/kg.
- (c) 15,000 kcals/kg.
- (d) 20,000 kcals/kg.

Answer: (b) 10,000 kcals/kg.

64. In a four stroke petrol engine during suction stroke

- (a) only petrol is sucked in.
- (b) only air is sucked in.
- (c) mixture of petrol and air is sucked in.
- (d) any combustible gas is sucked in.

Answer: (c) mixture of petrol and air is sucked in.

65. In a four stroke engine, the four operations (suction, compression, expansion and exhaust) are completed in.....revolution(s) of crankshaft.

- (a) eight
- (b) four
- (c) two
- (d) one

Answer: (c) two

65. In a two stroke engine, the four operations (suction, compression, expansion and exhaust) are completed in.....revolution(s) of crankshaft.

- (a) one
- (b) two
- (c) four
- (d) eight

Answer: (a) one

66. Most of the heat generated in IC engines goes to

- (a) cooling water.
- (b) exhaust gases.
- (c) friction, windage and radiation losses.
- (d) lubricating oil.

Answer: (a) cooling water.

67. Reciprocating motion of piston is converted into rotary one by

- (a) crank shaft.
- (b) connecting rod.
- (c) gudgeon pin.
- (d) gear box.

Answer: (b) connecting rod.

68. A two stroke engine may be identified by

- (a) cooling system.
- (b) lubrication system.
- (c) absence of valves.
- (d) any of the above.

Answer: (c) absence of valves.

69. The performance of engines of different outputs, speeds and sizes can be compared on the basis of

- (a) specific fuel consumption.
- (b) cylinder volume.
- (c) compression ratio.
- (d) piston size.

Answer: (a) specific fuel consumption.

70. The thermal efficiency of a diesel engine in comparison to that of a petrol engine is

- (a) lower.
- (b) higher.
- (c) the same.

(d) may be lower or higher.

Answer: (b) higher.

71. In an multi-cylinder engine the firing order should be in particular sequence because it

(a) will operate ignition system smoothly.

(b) will give smooth turning moment.

(c) will provide the best performance of the engine.

(d) all of the above.

Answer: (c) will provide the best performance of the engine.

72. High output diesel engines are started by

(a) self starter.

(b) compressed air.

(c) battery.

(d) cranking.

Answer: (b) compressed air.

73. The temperature of cooling water leaving the diesel engine should not exceed

(a) 25°C

(b) 40°C

(c) 70°C

(d) 85°C

Answer: (c) 70°C

74. Air filter is used in

(a) steam power plants.

(b) nuclear power plants.

(c) hydropower plants.

(d) diesel power plants.

Answer: (d) diesel power plants.

75. For supercharging of diesel engines, the air is supplied through

(a) injector.

(b) reciprocating compressor.

(c) centrifugal blower.

(d) any of the above.

Answer: (c) centrifugal blower.

76. Supercharging of diesel engines

- (a) supply pressurized air during suction.
- (b) increases the power output of the engine.
- (c) reduces the specific fuel consumption.
- (d) both (a) and (b).

Answer: (d) both (a) and (b).

77. The temperature at which a lubricating oil will give sufficient vapors to form a combustible mixture with air is called the

- (a) flash point.
- (b) pour point.
- (c) fire point.
- (d) combustion point.

Answer: (a) flash point.

78. Which of the following will be the lowest for a lubricating oil ?

- (a) Flash point.
- (b) Pour point.
- (c) Fire point.
- (d) Combustion point.

Answer: (b) Pour point.

79. Fire and flash points of oils are important from the point of view of

- (a) heating value.
- (b) viscosity.
- (c) ignition and storage hazards.
- (d) tendency of freezing during winter.

Answer: (c) ignition and storage hazards.

80. For larger output diesel electric power plants the engines used are

- (a) horizontal type.
- (b) vertical type, multi-cylinder and supercharged.
- (c) air cooled.
- (d) low rpm.

Answer: (b) vertical type, multi-cylinder and supercharged.

81. The gas turbine power plants have the advantages of

- (a) simplicity of design and installation, high reliability, compactness, clean exhaust and low initial cost.

(b) quick starting and capability of putting to share full load in few minutes.

(c) high overall efficiency, low specific consumption and long life in comparison to that of steam power plants.

(d) both (a) and (b).

Answer: (d) both (a) and (b).

82. The main drawbacks of gas turbine power plants are

(a) low overall efficiency, noisy operation and limited unit capacity.

(b) inability of using coal or heavy residual petroleum as fuels.

(c) high initial cost, poor reliability and large space requirements.

(d) both (a) and (b).

Answer: (d) both (a) and (b).

83. A gas turbine works on

(a) Carnot cycle,

(b) Brayton cycle.

(c) dual cycle.

(d) Rankine cycle.

(e) regenerative cycle.

Answer: (b) Brayton cycle.

84. Gas turbine is widely used in

- (a) locomotives.
- (b) automobiles.
- (c) aircrafts.
- (d) pumping stations.

Answer: (c) aircrafts.

85. Gas turbine power plants are not widely used

- (a) as peak load plants.
- (b) as standby power plants.
- (c) as base load plants.
- (d) in combination with steam power plants.

Answer: (c) as base load plants.

86. In comparison to steam power plants, the gas power plants have

- (a) low initial cost but higher operating cost.
- (b) high initial cost but low operating cost.
- (c) both initial as well operating costs high.
- (d) both initial as well as operating costs low.

Answer: (a) low initial cost but higher operating cost.

87. In which of the following places 70 MW gas turbine power plant being operated as base load plant ?

- (a) Nangal (H.P.).
- (b) Narnrup (Assam).
- (c) Jharia (Bihar).
- (d) Kokkata (W.B.).

Answer: (b) Narnrup (Assam).

88. The gas turbine power plants mainly use

- (a) coal and peat.
- (b) kerosine oil, diesel oil, residual oil.
- (c) gas oil.
- (d) natural gas and liquid petroleum fuels.

Answer: (d) natural gas and liquid petroleum fuels.

89. Compressor used in gas turbine is

- (a) reciprocating compressor.
- (b) screw compressor.
- (c) multistage axial flow compressor.
- (d) either (a) or (b).

Answer: (c) multistage axial flow compressor.

90. The blades of gas turbines are made of

- (a) stainless steel.
- (b) carbon steel.
- (a) high alloy steel.
- (d) high nickel alloy.

Answer: (d) high nickel alloy.

91. The pressure ratio in a gas turbine power plant is

- (a) 5 to 6
- (b) 9 to 12
- (c) 2 to 3

Answer: (a) 5 to 6

92. The highest temperature ever used for gas turbine power plants is about

- (a) 1,000°C
- (b) 500°C
- (c) 2,000°C

Answer: (a) 1,000°C

93. The heating value of gaseous fuels is about

- (a) 300 kJ/litre.
- (b) 100 kJ/litre.
- (c) 30 kJ/litre.
- (d) 10 kJ/litre.

Answer: (c) 30 kJ/litre.

94. Which of the following statements is not correct ?

- (a) The efficiency of modern gas turbine power plants is more than 50%.
- (b) One advanced feature of modern gas turbine power plants is higher firing temperature.
- (c) The installed capacity of gas turbine power plants in India exceeds 20% of total installed generating capacity.
- (d) The gas turbine power plants have the advantages of quick starting and capability of putting to share full load in few minutes.

Answer: (c) The installed capacity of gas turbine power plants in India exceeds 20% of total installed generating capacity.

95. Which of the following statements is correct ?

- (a) In a gas turbine plant, the combustion takes place in the compressor.
- (b) Aeroderivative turbines use clean fuel.

(c) Capital cost of a gas turbine power plant is higher than that of a steam power plant.

(d) Gas turbine power plants have the drawbacks of poor reliability and large space requirements.

Answer: (b) Aero-derivative turbines use clean fuel.

96. The compressor has to be started

(a) before starting of gas turbine.

(b) after starting of gas turbine.

(c) simultaneously with starting of gas turbine.

(d) at any time (i.e. before or after starting of gas turbine).

Answer: (a) before starting of gas turbine.

97. For starting gas turbine, its rotor is usually motored up to

(a) 10 percent of turbine rated speed.

(b) 25 percent of turbine rated speed.

(c) half of turbine rated speed.

(d) turbine rated speed.

Answer: (c) half of turbine rated speed.

98. In comparison to diesel engines the gas turbines have maximum combustion pressure

- (a) less.
- (b) same.
- (c) more.
- (d) unpredictable.

Answer: (a) less.

99. For the same cylinder size and speed which of the following engines will develop more power ?

- (a) Petrol engine.
- (b) Diesel engine.
- (c) Supercharged engine.
- (d) Gas engine.

Answer: (c) Supercharged engine.

100. Greater part of the power developed by the turbine is used in driving the compressor. It is around

- (a) 75%
- (b) 65%
- (c) 45%
- (d) 35%

Answer: (b) 65%

101. The work ratio of closed cycle gas turbine power plant depends upon

- (a) only on pressure ratio.
- (b) temperature ratio of the cycle and specific heat ratio.
- (c) pressure ratio, temperature ratio and specific heat ratio.
- (d) pressure ratio and specific heat ratio.

Answer: (c) pressure ratio, temperature ratio and specific heat ratio.

102. Overall efficiency of gas turbine is

- (a) less than that of diesel cycle.
- (b) more than that of diesel cycle.
- (c) more than that of otto cycle.
- (d) equal to that of Rankine or Carnet cycle.

Answer: (a) less than that of diesel cycle.

103. In comparison to diesel power plant the gas turbine power plant has

- (a) lower overall thermal efficiency.
- (b) higher overall thermal efficiency.
- (c) the same overall thermal efficiency.

(d) unpredictable.

Answer: (a) lower overall thermal efficiency.

104. Mechanical efficiency of a gas turbine in comparison to that of reciprocating IC engine is

(a) lower.

(b) higher.

(c) the same.

(d) unpredictable.

Answer: (b) higher.

105. Thermal efficiency of a gas turbine improves because of

(a) reheating of gas after partial expansion.

(b) removing the heat from compressed air between the stages of compression.

(c) utilizing the heat of exhaust gases to heat the compressed air before it is sent to combustion chamber.

(d) all of the above.

Answer: (d) all of the above.

106. The thermal efficiency of a gas turbine cycle with ideal regenerative heat exchanger is

- (a) less than work ratio.
- (b) more than work ratio.
- (c) equal to work ratio.
- (d) unpredictable.

Answer: (c) equal to work ratio.

107. With the increase in pressure ratio thermal efficiency of a simple gas turbine power plant with fixed turbine inlet temperature

- (a) increases.
- (b) reduces.
- (c) first increases and then falls.
- (d) first falls and then increases.

Answer: (c) first increases and then falls.

108. The combined cycle power plants are more appropriate for

- (a) base loads.
- (b) peak loads.
- (c) intermediate loads.

(d) for both base and peak loads.

Answer: (d) for both base and peak loads.

109. The combined cycle power plants are more appropriate for capacity factors of

(a) less than 20%

(b) 20 to 50%

(c) 50 to 70%

(d) 100%

Answer: (b) 20 to 50%

110. In a two stage gas turbine plant reheating after first stage

(a) improves thermal efficiency but reduces the work ratio.

(b) increases work ratio but reduces thermal efficiency.

(c) reduces both of the work ratio and thermal efficiency.

(d) increases both of the work ratio and thermal efficiency.

Answer: (b) increases work ratio but reduces thermal efficiency.

111. In a two stage gas turbine power plant inter-cooling and reheating

(a) improves the work ratio but reduces the thermal efficiency.

(b) reduces the work ratio but improves the thermal efficiency.

(c) improves both of the work ratio and thermal efficiency.

(d) reduces both of the work ratio and thermal efficiency.

Answer: (a) improves the work ratio but reduces the thermal efficiency.

112. A jet aircraft is powered by

(a) petrol engine.

(b) diesel engine.

(c) gas turbine.

(d) solar cells.

(e) batteries.

Answer: (c) gas turbine.

113. For a jet propulsion unit, ideally the work of compressor and that of gas turbine are

(a) different.

(b) equal.

(c) not related to each other.

(d) unpredictable.

Answer: (b) equal.

114. In a closed cycle operation of gas turbines

- (a) load variation is affected by controlling the absolute pressure and the mass flow of the circulating air.
- (b) high efficiency is maintained over the complete range of operating loads.
- (c) maximum unit capacity is increased.
- (d) all of the above.

Answer: (d) all of the above.

115. Coal and peat is not generally used in gas turbines as fuel because of

- (a) coal handling and ash handling problems.
- (b) their higher costs.
- (c) their non-availability.
- (d) all of the above.

Answer: (a) coal handling and ash handling problems.

116. The gas turbine power plant can be used in combination with steam power plants by

- (a) using exhaust gases from gas turbine power plant in heating of feed water coming from the steam turbine condenser.
- (b) using exhaust gases from gas turbine power plant as combustion air in steam boiler.

- (c) using gas from a supercharged boiler for expansion in gas turbine.
- (d) any of the above.

Answer: (d) any of the above.

117. In an MHD generator the conductor is made of

- (a) copper or aluminum.
- (b) liquid metal.
- (c) gas.
- (d) liquid metal or gas.

Answer: (d) liquid metal or gas.

118. The nature of the current developed in MHD generator is

- (a) ac.
- (b) dc.
- (c) either dc or ac.

Answer: (b) dc.

119. Power output per unit volume of an MHD generator is proportional to

- (a) specific electrical conductivity of gas.
- (b) square of the magnetic field strength.
- (c) square of the fluid velocity.

(d) all of the above.

Answer: (d) all of the above.

120. Seeding material is injected into the working fluid, in MHD generator, in order to

(a) increase the conductivity of the gas.

(b) reduce the conductivity of the gas.

(c) reduce the temperature of the gas.

(d) none of the above.

Answer: (a) increase the conductivity of the gas.

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