

1. Free air is the air at

- (a) atmospheric conditions at any specific location
- (b) 20°C and 1 kg/cm<sup>2</sup> and relative humidity of 36%
- (c) 0°C and standard atmospheric conditions
- (d) 15°C and 1 kg/cm<sup>2</sup>
- (e) 25°C, 1 kg/cm<sup>2</sup> and relative humidity of 50%.

Ans: a

2. Standard air is the air at

- (a) atmospheric conditions at any specific location
- (b) 20°C and 1 kg/cm<sup>2</sup> and relative humidity 36%
- (c) 0°C and standard atmospheric conditions
- (d) 15°C and 1 kg/cm<sup>2</sup>
- (e) 25°C, 1 kg/cm<sup>2</sup> and RH of 60%.

Ans: b

3. 1 m of air at atmospheric condition weighs approximately

- (a) 0.5 kg
- (b) 1.0 kg
- (c) 1.3 kg
- (d) 2.2 kg
- (e) 3.2 kg.

Ans: c

4. Adiabatic compression is one in which

- (a) temperature during compression remains constant
- (b) no heat leaves or enters the compressor cylinder during compression
- (c) temperature rise follows a linear relationship
- (d) work done is maximum
- (e) entropy decreases.

Ans: b

5. The capacity of a compressor is 5 m /mih. 5 m /min refers to

- (a) standard air
- (b) free air
- (c) compressed air
- (d) compressed air at delivery pressure
- (e) air sucked.

Ans: b

6. The overall isothermal efficiency of compressor is defined as the ratio of

- (a) isothermal h.p. to the BHP of motor
- (b) isothermal h.p. to adiabatic h.p.
- (c) power to drive compressor to isothermal h.p.
- (d) work to compress air isothermally to work for actual compression
- (e) isothermal work to ideal work.

Ans: a

7. The- most efficient method of compressing air is to compress it

- (a) isothermally
- (b) adiabatically
- (c) isentropically
- (d) isochronically
- (e) as per law  $pV$

Ans: a

8. Maximum work is done in compressing air when the compression is

- (a) isothermal
- (b) adiabatic
- (c) polytropic
- (d) any one of the above
- (e) none of the above.

Ans: b

9. The pressure and temperature conditions of air at the suction of compressor are

- (a) atmospheric
- (b) slightly more than atmospheric
- (c) slightly less than atmospheric
- (d) pressure slightly more than atmospheric and temperature slightly less than atmospheric

(e) pressure slightly less than atmospheric and temperature slightly more than atmospheric.

Ans: e

10. Isothermal compression efficiency can be attained by running the compressor

- (a) at very high speed
- (b) at very slow speed
- (c) at average speed
- (d) at zero speed
- (e) isothermally.

Ans: b

11. The compressor capacity with decrease in suction temperature

- (a) increases
- (b) decreases
- (c) remains unaffected
- (d) may increase or decrease depending on compressor capacity
- (e) increases upto certain limit and then decreases.

Ans: a

12. Isothermal compression efficiency, even when running at high speed, can be approached by using

- (a) multi-stage compression
- (b) cold water spray
- (c) both (a) and (b) above
- (d) fully insulating the cylinder
- (e) high stroke.

Ans: c

13. Compression efficiency is compared against

- (a) ideal compression
- (b) adiabatic compression
- (c) both isothermal and adiabatic compression
- (d) isentropic compression
- (e) isothermal compression.

Ans: e

14. Aeroplanes employ following type of compressor

- (a) radial flow
- (b) axial flow
- (c) centrifugal
- (d) combination of above
- (e) none of the above.

Ans: b

15. Inter cooling in compressors

- (a) cools the delivered air
- (b) results in saving of power in compressing a given volume to given pressure
- (c) is the standard practice for big compressors
- (d) enables compression in two stages
- (e) prevents compressor jacket running very hot.

Ans: b

16. An ideal air compressor cycle without clearance on p-v diagram can be represented by following processes

- (a) one adiabatic, two isobaric, and one constant volume
- (b) two adiabatic and two isobaric
- (c) two adiabatic, one isobaric and one constant volume
- (d) one adiabatic, one isobaric and two constant volume
- (e) two isobaric, two adiabatic and one constant volume.

Ans: a

17. An ideal air compressor cycle with clearance on p-v diagram can be represented by following processes

- (a) one adiabatic, two isobaric, and one constant volume
- (b) two adiabatic and two isobaric
- (c) two adiabatic, one isobaric and one constant volume,
- (d) one adiabatic, one isobaric and two constant volume
- (e) two isobaric, two adiabatic and one constant volume.

Ans: b

18. What will be the volume of air at 327°C if its volume at 27°C is 1.5 m<sup>3</sup>/mt

- (a) 3 m<sup>3</sup>/mt .
- (b) 1.5 m<sup>3</sup>/mt
- (c) 18 m<sup>3</sup>/mt'

- (d) 6 m<sup>3</sup>/mt
- (e) 0.75 m<sup>3</sup>/mt.

Ans: a

19. The work done per unit mass of air in compression will be least when  $n$  is equal to

- (a) 1
- (b) 1.2
- (c) 1.3
- (d) 1.4
- (e) 1.5

Ans: a

20. Isothermal compression though most efficient, but is not practicable because

- (a) it requires very big cylinder
- (b) it does not increase pressure much
- (c) it is impossible in practice
- (d) compressor has to run at very slow speed to achieve it
- (e) it requires cylinder to be placed in water.

Ans: d

21. Ratio of indicated H.P. and brake H.P. is known as

- (a) mechanical efficiency
- (b) volumetric efficiency
- (c) isothermal efficiency
- (d) adiabatic efficiency
- (e) relative efficiency.

Ans: a

22. The ratio of work done per cycle to the swept volume in case of compressor is called

- (a) compression index
- (b) compression ratio
- (c) compressor efficiency
- (d) mean effective pressure
- (e) compressor effectiveness.

Ans: d

23. Cylinder clearance in a compressor should be

- (a) as large as possible
- (b) as small as possible
- (c) about 50% of swept volume
- (d) about 100% of swept volume
- (e) none of the above.

Ans: b

24. Ratio of compression is the ratio of

- (a) gauge discharge pressure to the gauge intake pressure
- (b) absolute discharge pressure to the absolute intake pressure
- (c) pressures at discharge and suction corresponding to same temperature
- (d) stroke volume and clearance volume
- (e) none of the above.

Ans: b

25. Clearance volume in actual reciprocating compressors is essential

- (a) to accommodate Valves in the cylinder head
- (b) to provide cushioning effect
- (c) to attain high volumetric efficiency
- (d) to avoid mechanical bang of piston with cylinder head
- (e) to provide cushioning effect and also to avoid mechanical bang of piston with cylinder head.

Ans: e

26. The net work input required for compressor with increase in clearance volume

- (a) increases
- (b) decreases
- (c) remains same
- (d) increases/decreases depending on compressor capacity
- (e) unpredictable.

Ans: c

27. Ratio of indicated h.p. to shaft h.p. is known as

- (a) compressor efficiency
- (b) isothermal efficiency
- (c) volumetric efficiency
- (d) mechanical efficiency
- (e) adiabatic efficiency.

Ans: d

28. Volumetric efficiency is

- (a) the ratio of stroke volume to clearance volume
- (b) the ratio of the air actually delivered to the amount of piston displacement
- (c) reciprocal of compression ratio
- (d) index of compressor performance
- (e) proportional to compression ratio.

Ans: b

29. Volumetric efficiency of air compressors is of the order of

- (a) 20-30%
- (b) 40-50%
- (c) 60-70%
- (d) 70-90%
- (e) 90-100%.

Ans: d

30. Volumetric efficiency of a compressor with clearance volume

- (a) increases with increase in compression ratio
- (b) decreases with increase in compression ratio
- (c) is not dependent upon compression ratio
- (d) may increase/decrease depending on compressor capacity
- (e) unpredictable.

Ans: b

31. Volumetric efficiency of a compressor without clearance volume

- (a) increases with increase in compression ratio
- (b) decreases with increase in compression ratio
- (c) is not dependent upon compression ratio
- (d) may increase/decrease depending on compressor capacity
- (e) unpredictable.

Ans: c

32. The clearance volume of the air compressor is kept minimum because

- (a) it allows maximum compression to be achieved
- (b) it greatly affects volumetric efficiency

- (c) it results in minimum work
- (d) it permits isothermal compression
- (e) none of the above.

Ans: b

33. Euler's equation is applicable for

- (a) centrifugal compressor
- (b) axial compressor
- (c) pumps
- (d) all of the above
- (e) none of the above.

Ans: d

40. Out of the following, from where you will prefer to take intake for air compressor

- (a) from an air conditioned room maintained at 20°C
- (b) from outside atmosphere at 1°C
- (c) from coal yard side
- (d) from a side where cooling tower is located nearby
- (e) from any one of the above locations.

Ans: d

41. Mining industry usually employs following motive power

- (a) A.C. electric motor
- (b) compressed air
- (c) petrol engine
- (d) diesel engine
- (e) D.C. electric motor.

Ans: b

42. Which is false statement about air receivers

- (a) These are used to dampen pulsations ,
- (b) These act as reservoir to- take care of sudden demands
- (c) These increase compressor efficiency
- (d) These knock out some oil and moisture
- (e) These reduce frequent on/off operation of compressors.

Ans: c



44. An air receiver is to be placed outside. Should it be placed in

- (a) sun
- (b) shade
- (c) rain
- (d) enclosed room
- (e) anywhere.

Ans:

45. Which is false statement about multistage compression .

- (a) Power consumption per unit of air delivered is low
- (b) Volumetric efficiency is high
- (c) It is best suited for compression ratios around 7:1
- (d) The moisture in air is condensed in the intercooler
- (e) Outlet temperature is reduced.

Ans: b

46. In multistage compressor, the isothermal compression is achieved by

- (a) employing intercooler
- (b) by constantly cooling the cylinder
- (c) by running compressor at very slow speed
- (d) by insulating the cylinder
- (e) none of the above.

Ans: c

47. Reciprocating air compressor is best suited for

- (a) large quantity of air at high pressure
- (b) small quantity of air at high pressure
- (c) small quantity of air at low pressure
- (d) large quantity of air at low pressure
- (e) any one of the above.

Ans: a

48. Rotary compressor is best suited for

- (a) large quantity of air at high pressure
- (b) small quantity of air at high pressure
- (c) small quantity of air at low pressure
- (d) large quantity of air at low pressure

(e) any one of the above.

Ans: b

49. The capacity of compressor will be highest when its intake temperature is

(a) lowest

(b) highest

(c) anything.

(d) atmospheric

(e) none of the above.

Ans: d

50. After-cooler is used to

(a) cool the air

(b) decrease the delivery temperature for ease in handling

(c) cause moisture and oil vapour to drop out

(d) reduce volume

(e) increase pressure.

Ans: c

51. To avoid moisture troubles, the compressed air main line should

(a) rise gradually towards the point of use

(b) drop gradually towards the point of use

(c) be laid vertically

(d) be laid exactly horizontally

(e) none of the above

Ans: b

52. Separators in compressor installations are located

(a) before intercooler

(b) after intercooler

(c) after receiver

(d) between after-cooler and air receiver

(e) before suction.

Ans: d

53. The area of actual indicator diagram on an air compressor as compared to area of ideal indicator diagram is

- (a) less
- (b) more
- (c) same
- (d) more/less depending on compressor capacity
- (e) unpredictable.

Ans: b

54. An air compressor may be controlled by

- (a) throttle control (b) clearance control
- (c) blow-off control
- (d) any one of the above
- (e) none of the above.

Ans: d

55. The compressor efficiency is the

- (a) isothermal H.P./indicated H.R
- (b) isothermal H.P./shaft H.R
- (c) total output/air input
- (d) compression work/motor input
- (e) none Of the above.

Ans: a

56. To avoid moisture troubles, the branch connections from compressed air lines should be taken from

- (a) top side of main
- (b) bottom side of main
- (c) left side of main
- (d) right side of main
- (e) any location.

Ans: a

57. The thrust on the rotor in a centrifugal compressor is produced by

- (a) radial component
- (b) axial component
- (c) tangential component
- (d) resultant component

Ans: b

58. The compressor performance at higher altitude compared to sea level will be

- (a) same
- (b) higher
- (c) lower
- (d) dependent on other factors
- (e) none of the above.

Ans: c

59. A compressor at high altitude will draw

- (a) more power
- (b) less power
- (c) same power
- (d) more/less power depending on other factors
- (e) none of the above.

Ans: b

60. During peak load periods, the best method of controlling compressors is

- (a) start-stop motor
- (b) constant speed unloader
- (c) relief valve
- (d) variable speed
- (e) none of the above.

Ans: b

61. A centrifugal compressor works on the principle of

- (a) conversion of pressure energy into kinetic energy
- (b) conversion of kinetic energy into pressure energy
- (c) centripetal action
- (d) generating pressure directly
- (e) combination of (a) and (d).

Ans: b

62. For a compressor, least work will be done if the compression is

- (a) is entropic
- (b) isothermal
- (c) poly tropic

- (d) somewhere in between is entropic and isothermal
- (e) none of the above.

Ans: b

67. In a compressor, free air delivered is the actual volume delivered at the stated pressure reduced to

- (d) N.T.P. conditions
- (b) intake temperature and pressure conditions
- (c)  $0^{\circ}\text{C}$  and  $1\text{ kg/cm}^2$
- (d)  $20^{\circ}\text{C}$  and  $1\text{ kg/cm}^2$
- (e) none of the above.

Ans: b

68. The volumetric efficiency of a compressor is calculated on the basis of

- (a) volume of air inhaled at working conditions
- (b) volume of air inhaled at N.T.P. conditions
- (c) volume at  $0^{\circ}\text{C}$  and  $1\text{ kg/cm}^2$
- (d) volume at  $20^{\circ}\text{C}$  and  $1\text{ kg/cm}^2$
- (e) none of the above.

Ans: b

69. The volumetric efficiency of a compressor falls roughly as follows for every 100 m increase in elevation

- (a) 0.1%
- (b) 0.5%
- (c) 1.0%
- (d) 5%
- (e) 10%.

Ans: c

70. For slow-speed large capacity compressor, following type of valve will be best suited

- (a) poppet valve
- (b) mechanical valve of the corliss, sleeve, rotary or semirotary type
- (c) disc or feather type
- (d) any of the above
- (e) none of the above.

Ans: c

71. During base load operation, the best method of controlling compressor is

- (a) start-stop motor
- (b) constant speed unloaded
- (c) relief valve
- (d) variable speed
- (e) none of the above.

Ans: a

72. More than one stage will be preferred for reciprocating compressor if the delivery pressure is more than

- (a) 2 kg/cm<sup>2</sup>
- (b) 6 kg/cm<sup>2</sup>
- (c) 10 kg/cm<sup>2</sup>
- (d) 14.7 kg/cm<sup>2</sup>
- (e) none of the above.

Ans: a

73. The advantage of multistage compression over single stage compression is

- (a) lower power consumption per unit of air delivered
- (b) higher volumetric efficiency
- (c) decreased discharge temperature
- (d) moisture free air
- (e) all of the above.

Ans: e

74. Pick up the wrong statement about advantages of multistage compression

- (a) better lubrication is possible advantages of multistage
- (b) more loss of air due to leakage past the cylinder
- (c) mechanical balance is better
- (d) air can be cooled perfectly in between
- (e) more uniform torque, light cylinder and saving in work.

Ans: b

75. As the value of index ' $n$ ' is decreased, the volumetric efficiency will

- (a) increase
- (b) decrease

- (c) remain unaffected
- (d) may increase/decrease depending on compressor clearance
- (e) none of the above.

Ans: b

76. The ratio of outlet whirl velocity to blade velocity in case of centrifugal compressor is called

- (a) slip factor
- (b) velocity factor
- (c) velocity coefficient
- (d) blade effectiveness

Ans: a

79. Losses in a centrifugal compressor are due to

- (a) inlet losses
- (b) impeller channel losses
- (c) diffuser losses
- (d) all of the above
- (e) none of the above

Ans: d

80. The volumetric efficiency of a compressor falls roughly as follows for every 5°C increase in atmospheric temperature

- (a) 0.1%
- (b) 0.5%
- (c) 1%
- (d) 5%
- (e) 10%.

Ans: c

81. The indicated work per unit mass of air delivered is

- (a) directly proportional to clearance volume
- (b) greatly affected by clearance volume
- (c) not affected by clearance volume
- (d) inversely proportional to clearance volume

Ans: c

89. For actual single stage centrifugal compressor, the maximum pressure ratio is of the order of

- (a) 1 : 1.2
- (b) 1 : 2
- (c) 1 : 4
- (d) 1 : 10
- (e) 1 : 1

Ans:

90. Which is false statement about advantages of multistage compressor in comparison to single stage compressor

- (a) less power requirement
- (b) better mechanical balance
- (c) less loss of air due to leakage past the cylinder
- (d) more effective lubrication
- (e) lower volumetric efficiency.

Ans: e

91. The ratio of isentropic work to Euler work is known as

- (a) pressure coefficient
- (b) work coefficient
- (c) polytropic reaction
- (d) slip factor
- (e) compressor efficiency.

Ans: a

92. The criterion of the thermodynamic efficiency for rotary compressor is

- (a) isentropic compression
- (b) isothermal compression
- (c) polytropic compression
- (d) any one of the above
- (e) none of the above.

Ans: a

93. For supplying intermittent small quantity of air at high pressure, following compressor is best suited

- (a) centrifugal
- (b) reciprocating
- (c) axial



- (d) screw
- (e) turbo jet.

Ans: b

94. For minimum work in multistage compression, assuming same index of compression in all stages

- (a) work done in first stage should be more
- (b) work done in subsequent stages should increase
- (c) work done in subsequent stages should decrease
- (d) work done in all stages should be equal
- (e) work done in any stage is no criterion for minimum work but depends on other factors.

Ans: d

95. For a two stage compressor\* if index of compression for higher stage is greater than index of compression for lower stage, then the optimum pressure as compared to ideal case will

- (a) increase
- (b) decrease
- (c) remain unaffected
- (d) other factors control it
- (e) unpredictable.

Ans: a

96. Diffuser in a compressor is used to

- (a) increase velocity
- (b) make the flow stream-line
- (c) convert pressure energy into kinetic energy
- (d) convert kinetic energy into pressure energy
- (e) increase degree of reaction.

Ans: d

98. The ratio of isentropic work to euler's work is known as

- (a) compressor efficiency
- (b) isentropic efficiency
- (c) Euler's efficiency
- (d) pressure coefficient
- (e) pressure ratio.

Ans: d

99. The thermodynamic efficiency of rotary compressor is based on

- (a) isothermal compression
- (b) adiabatic compression
- (c) isentropic compression
- (d) polytropic compression
- (e) none of the above.

Ans: b

100. Phenomenon of choking in compressor means

- (a) no flow of air
- (b) fixed mass flow rate regardless of pressure ratio
- (c) reducing mass flow rate with increase in pressure ratio
- (d) increased inclination of chord with air stream
- (e) does not occur.

Ans: b

101. The maximum compression ratio in an actual single stage axial flow compressor is of the order of

- (a) 1 : 1.2
- (b) 1 : 2
- (c) 1 : 5
- (d) 1 : 10
- (e) 1 : 1

Ans: a

102. Maximum delivery pressure of a rotary air compressor is of the order of

- (a) 6 kg/cm<sup>2</sup>
- (b) 10 kg/cm<sup>2</sup>
- (c) 16 kg/cm<sup>2</sup>
- (d) 25 kg/cm<sup>2</sup>
- (e) 40 kg/cm<sup>2</sup>.

Ans: b

103. Surging is the phenomenon of

- (a) air stream blocking the passage
- (b) motion of air at sonic velocity

- (c) unsteady, periodic and reversed flow
- (d) air stream not able to follow the blade contour
- (e) production of no air pressure.

Ans: c

104. Pick up wrong statement.

Surging phenomenon in centrifugal compressor depends on

- (a) mass flow rate
- (b) pressure ratio
- (c) change in load
- (d) stagnation pressure at the outlet
- (e) all of the above.

Ans: d

105. The ratio of the increase in pressure in rotor blades to total increase in pressure in the stage is called

- (a) pressure ratio
- (b) pressure coefficient
- (c) degree of reaction
- (d) slip factor
- (e) stage factor.

Ans: c

106. Axial flow compressor resembles

- (a) centrifugal pump
- (b) reciprocating pump
- (c) turbine
- (d) sliding vane compressor
- (e) none of the above.

Ans: c

107. Axial flow compressor has the following advantage over centrifugal compressor

- (a) larger air handling ability per unit frontal area
- (b) higher pressure ratio per stage
- (c) aerofoil blades are used
- (d) higher average velocities
- (e) none of the above.

Ans: a

108. Actual compression curve is

- (a) same as isothermal
- (b) same as adiabatic
- (c) better than isothermal and adiabatic
- (d) in between isothermal and adiabatic
- (e) none of the above.

Ans: d

109. Atmospheric pressure is 1.03 kg/cm and vapor pressure is 0.03 kg/cm . The air pressure will be

- (a) 1.03 kg/cm<sup>2</sup>
- (b) 1.06 kg/cm<sup>2</sup>
- (c) 1.00 kg/cm<sup>2</sup>
- (d) 0.53 kg/cm<sup>2</sup>
- (e) 0.5 kg/cm<sup>2</sup>.

Ans: c

110. The pressure ratio of an ideal vaned compressor with increase in mass flow rate

- (a) increases
- (b) decreases
- (c) remains constant
- (d) first decreases and then increases
- (e) unpredictable.

Ans: c

111. Rotary compressors are suitable for

- (a) large discharge at high pressure
- (b) low discharge at high pressure
- (c) large discharge at low pressure
- (d) low discharge at low pressure
- (e) there is no such limitation.

Ans: c

112. The volumetric efficiency of compressor with increase in compression ratio will

- (a) increase

- (b) decrease
- (c) remain same
- (d) may increase/decrease depending on clearance volume
- (e) none of the above.

Ans: b

113. Stalling of blades in axial flow compressor is the phenomenon of

- (a) air stream blocking the passage
- (b) motion of air at sonic velocity
- (c) unsteady periodic and reversed flow
- (d) air stream not able to follow the blade contour
- (e) production of no air pressure.

Ans: d

114. Pick up the wrong statement

- (a) centrifugal compressors deliver practically constant pressure over a considerable range of capacities
- (b) Axial flow compressors have a substantially constant delivery at variable pressures
- (c) centrifugal compressors have a wider stable operating range than axial flow compressors
- (d) axial flow compressors are bigger in diameter compared to centrifugal type
- (e) axial flow compressors apt to be longer as compared to centrifugal type.

Ans: d

115. The work ratio of a gas turbine plant is defined as the ratio of

- (a) net work output and heat supplied
- (b) net work output and work done by turbine
- (c) actual heat drop and isentropic heat drop
- (d) net work output and isentropic heat drop
- (e) isentropic increase/drop in temperature and actual increase/ drop in temperature.

Ans: b

116. Gas turbine works on

- (a) Brayton or Atkinson cycle
- (b) Carnot cycle
- (c) Rankine cycle
- (d) Ericsson cycle
- (e) Joule cycle.

Ans: a

117. The work ratio of simple gas turbine cycle depends on

- (a) pressure ratio
- (b) maximum cycle temperature
- (c) minimum cycle temperature
- (d) all of the above
- (e) none of the above.

Ans: d

118. The pressure ratio for an open cycle gas turbine compared to closed cycle gas turbine of same h.p. is

- (a) low
- (b) high
- (c) same
- (d) low/high depending on make and type
- (e) unpredictable.

Ans: a

119. Open cycle gas turbine works on

- (a) Brayton or Atkinson cycle
- (b) Rankine cycle
- (c) Carnot cycle
- (d) Ericsson cycle
- (e) Joule cycle.

Ans: a

120. The fuel consumption in gas turbines is accounted for by

- (a) lower heating value
- (b) higher heating value
- (c) heating value
- (d) higher calorific value
- (e) highest calorific value.

Ans: a

121. Gas turbines for power generation are normally used

- (a) to supply base load requirements
- (b) to supply peak load requirements

- (c) to enable start thermal power plant
- (d) in emergency
- (e) when other sources of power fail.

Ans: b

122. Mechanical efficiency of gas turbines as compared to I.C engines is

- (a) higher
- (b) lower
- (c) same
- (d) depends on osier considerations
- (e) unpredictable.

Ans: a

123. The ratio of specific weigh/h.p. of gas turbine and I.C engines may be typically of the order of

- (a) 1 : 1
- (b) 2 : 1
- (c) 4 : 1
- (d) 1:2
- (e) 1 : 6.

Ans: e

124. The thermal efficiency of a gas turbine as compared to a diesel plant is

- (a) same
- (b) more
- (c) less
- (d) depends on other factors
- (e) unpredictably.

Ans: c

125. The air-fuel ratio in gas turbines is of the order of

- (a) 7 : 1
- (b) 15 : 1
- (c) 30 : 1
- (d) 40 : 1
- (e) 50: 1.

Ans: e

126. The pressure ratio in gas turbines is of the order of

- (a) 2:1
- (b) 4:1
- (c) 61: 1
- (d) 9 : 1
- (e) 12:1.

Ans: c

128. The hottest point in a gas turbine is

- (a) at the base
- (b) at the tip
- (c) in the center
- (d) between  $\sim$  to  $i$  of the blade height
- (e) uniformly heated.

Ans: d

129. The following is true for an open cycle gas turbine having exhaust heat exchanger.

Atmospheric air before entering the compressor is

- (a) heated
- (b) compressed air before entering the combustion chamber is heated
- (c) bled gas from turbine is heated and readmitted for complete expansion
- (d) exhaust gases drive the compressor
- (e) part of exhaust gases are heated and mixed up with atmospheric air to utilize exhaust heat.

Ans: b

130. Gas turbine blades are given a rake

- (a) equal to zero
- (b) in the direction of motion of blades
- (c) opposite to the direction of motion of blades
- (d) depending on the velocity
- (e) none of the above.

Ans: b

131. Efficiency of gas turbine is increased by

- (a) reheating
- (b) inter cooling
- (c) adding a re generator



- (d) all of the above
- (e) none of the above.

Ans: c

132. Temperature of gases at end of compression as compared to exhaust gases in a gas turbine is

- (a) higher
- (b) lower
- (c) equal
- (d) can't be compared
- (e) unpredictable.

Ans: b

133. The ideal efficiency of simple gas turbine cycle depends on

- (a) pressure ratio
- (b) maximum cycle temperature
- (c) minimum cycle temperature
- (d) all of the above
- (e) none of the above.

Ans: a

134. The thermal efficiency of a simple gas turbine for a given turbine inlet temperature with increase in pressure ratio

- (a) increases
- (b) decreases
- (c) first increases and then decreases
- (d) first decreases and then increases
- (e) remains same.

Ans: a

135. Gas turbines use following type of air compressor

- (a) centrifugal type
- (b) reciprocating type
- (c) lobe type
- (d) axial flow type
- (e) none of the above.

Ans: d

136. As the turbine inlet temperature increases, the thermal efficiency of gas turbine for the optimum pressure ratio

- (a) increases
- (b) decreases
- (c) remains same
- (d) first increases and then decreases
- (e) first decreases and then increases.

Ans: a

137. There is a certain pressure ratio (optimum) for a gas turbine at which its thermal efficiency is maximum. With increase in turbine temperature, the value of pressure ratio for the peak efficiency would

- (a) remain same
- (b) decrease
- (c) increase
- (d) unpredictable
- (e) none of the above.

Ans: c

138. The material commonly used for air craft gas turbine is

- (a) stainless steel
- (b) high alloy' steel
- (c) duralumin
- (d) Timken, Haste and Colonel alloys
- (e) titanium.

Ans: d

139. It is not possible to use closed gas turbine cycle in aeronautical engines because

- (a) it is inefficient
- (b) it is bulky
- (c) it requires cooling water for its operation

Ans: c

140. The combustion efficiency of a gas turbine using perfect combustion chamber is of the order of

- (a) 50%
- (b) 75%

- (c) 85%
- (d) 90%
- (e) 99%.

Ans: e

141. The maximum combustion pressure in gas turbine as compared to I.C. engine is

- (a) more
- (b) less
- (c) same
- (d) depends on other factors
- (e) unpredictable.

Ans: b

142. For an irreversible gas turbine cycle, the efficiency and work ratio both depend on

- (a) pressure ratio alone
- (b) maximum cycle temperature alone
- (c) minimum cycle temperature alone
- (d) both pressure ratio and maximum cycle temperature
- (e) none of the above.

Ans: d

143. Producer gas is produced by

- (a) carbonation of coal
- (b) passing steam over incandescent coke
- (c) passing air and a large amount of steam over waste coal at about 65°C
- (d) partial combustion of coal, coke, anthracite coal or charcoal in a mixed air steam blast
- (e) same way as the natural gas.

Ans: d

144. Water gas is produced by

- (a) carbonation of coal
- (b) passing steam over incandescent coke
- (c) passing air and a large amount of steam over waste coal at about 65°C
- (d) partial combustion of coal, eke, anthracite coal or charcoal in a mixed air steam blast
- (e) same way as the natural gas.

Ans: b

14 Water is injected in gas turbine cycle to

- (a) control temperature
- (b) control output of turbine
- (c) control fire hazards
- (d) increase efficiency
- (e) it is never done.

Ans: b

146. A gas turbine used in air craft should have

- (a) high h.p. and low weight
- (b) low weight and small frontal area
- (c) small frontal area and high h.p.
- (d) high speed and high h.p.
- (e) all of the above.

Ans: b

148. The closed cycle in gas turbines

- (a) provides greater flexibility
- (b) provides lesser flexibility
- (c) is never used
- (d) is used when gas is to be burnt
- (e) none of the above.

Ans: a

149. In the axial flow gas turbine, the work ratio is the ratio of

- (a) compressor work and turbine work
- (b) output and input
- (c) actual total head temperature drop to the entropic total head drop from total head inlet to static head outlet
- (d) actual compressor work and theoretical compressor work
- (e) none of the above.

Ans: c

150. The degree of reaction of an axial flow turbine is the ratio of is entropic temperature drop in a blade row to the

- (a) adiabatic temperature drop in the stage
- (b) total temperature drop

- (c) total temperature drop in the stage
- (d) total adiabatic temperature drop
- (e) difference of maximum and minimum temperature in the cycle.

Ans: c

153. If infinite number of heaters be used in a gas turbine, then expansion process in turbine approaches

- (a) isothermal
- (b) isentropic
- (c) adiabatic
- (d) isochoric
- (e) isobaric.

Ans: a

154. Pick up the correct statement

- (a) gas turbine uses low air-fuel ratio to economies on fuel
- (b) gas turbine uses high air-fuel ratio to reduce outgoing temperature
- (c) gas turbine uses low air-fuel ratio to develop the high thrust required
- (d) all of the above
- (e) none of the above.

Ans: b