

Thermodynamics Objective Type Questions And Answers

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1. Which of the following variables controls the physical properties of a perfect gas

- (a) pressure
- (b) temperature
- (c) volume
- (d) all of the above
- (e) atomic mass.

Answer : d

2. The unit of temperature in S.I. units is

- (a) Centigrade
- (b) Celsius
- (c) Fahrenheit
- (d) Kelvin
- (e) Rankine.

Answer : d

3. Which of the following laws is applicable for the behavior of a perfect gas

- (a) [Boyle's law](#)
- (b) Charles'law
- (c) Gay-Lussac law
- (d) all of the above
- (e) Joule's law.

Answer : d

4. The unit of mass in S.I. units is

- (a) kilogram
- (b) gram
- (c) tonne
- (d) quintal
- (e) newton.

Answer : a

5. The unit of length in S.I. units is

- (a) meter
- (b) centimeter
- (c) kilometer
- (d) millimeter.

Answer : a

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6. The unit of time in S.I. units is

- (a) second
- (b) minute
- (c) hour
- (d) day
- (e) year.

Answer : a

7. The unit of energy in S.I. units is

- (a) watt
- (b) joule
- (c) joule/s
- (d) joule/m
- (e) joule m.

Answer : b

8. According to Gay-Lussac law for a perfect gas, the absolute pressure of given mass varies directly as

- (a) temperature
- (b) absolute
- (c) absolute temperature, if volume is kept constant
- (d) volume, if temperature is kept constant
- (e) remains constant, if volume and temperature are kept constant.

Answer : c

9. General gas equation is

- (a) $PV=nRT$
- (b) $PV=mRT$
- (d) $PV = C$
- (c) $PV=KiRT$
- (e) $C_p-C_v = W_j$

Answer : b

10. An ideal gas as compared to a real gas at very high pressure occupies

- (a) more volume
- (b) less volume
- (c) same volume
- (d) unpredictable behaviour
- (e) no such correlation.

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Answer : a

11. Which of the following can be regarded as gas so that gas laws could be applicable, within the commonly encountered temperature limits.

- (a) O₂, N₂, steam, CO₂
- (b) O₂, N₂, water vapour
- (c) SO₂, NH₃, CO₂, moisture
- (d) O₂, N₂, H₂, air
- (e) steam vapours, H₂, CO₂.

Answer : d

12. According to Dalton's law, the total pressure of the mixture of gases is equal to

- (a) greater of the partial pressures of all
- (b) average of the partial pressures of all
- (c) sum of the partial pressures of all
- (d) sum of the partial pressures of all divided by average molecular weight
- (e) atmospheric pressure.

Answer : c

13. The unit of pressure in S.I. units is

- (a) kg/cm²
- (b) mm of water column
- (c) pascal
- (d) dynes per square cm
- (e) bars

Answer : c

14. Temperature of a gas is produced due to

- (a) its heating value
- (b) kinetic energy of molecules
- (c) repulsion of molecules
- (d) attraction of molecules
- (e) surface tension of molecules.

Answer : b

15. A closed system is one in which

- (a) mass does not cross boundaries of the system, though energy may do so
- (b) mass crosses the boundary but not the energy
- (c) neither mass nor energy crosses the boundaries of the system

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- (d) both energy and mass cross the boundaries of the system
- (e) thermodynamic reactions take place.

Answer : a

16. According to kinetic theory of gases, the absolute zero temperature is attained when

- (a) volume of the gas is zero
- (b) pressure of the gas is zero
- (c) kinetic energy of the molecules is zero
- (d) specific heat of gas is zero
- (e) mass is zero.

Answer : c

17. The pressure of a gas in terms of its mean kinetic energy per unit volume E is equal to

- (a) $E/3$
- (b) $E/2$
- (c) $3E/4$
- (d) $2E/3$
- (e) $5E/4$.

Answer : d

18. Kinetic theory of gases assumes that the collisions between the molecules are

- (a) perfectly elastic
- (b) perfectly inelastic
- (c) partly elastic
- (d) partly inelastic
- (e) partly elastic and partly inelastic.

Answer : a

19. Kinetic energy of the molecules in terms of absolute temperature (T) is proportional to

- (a) T
- (b) j
- (c) J^2
- (d) V_r
- (e) $1/V_r$.

Answer : a

20. Superheated vapour behaves

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- (a) exactly as gas
- (b) as steam
- (c) as ordinary vapour
- (d) approximately as a gas
- (e) as average of gas and vapour.

Answer : d

21. No liquid can exist as liquid at

- (a) – 273 °K
- (b) vacuum
- (c) zero pressure
- (d) centre of earth
- (e) in space.

Answer : c

22. Absolute zero pressure will occur

- (a) at sea level
- (b) at the center of the earth
- (c) when molecular momentum of the system becomes zero
- (d) under vacuum conditions
- (e) at a temperature of – 273 °K

Answer : c

23. The unit of power in S.I. units is

- (a) newton
- (b) pascal
- (c) erg
- (d) watt
- (e) joule.

Answer : d

24. The condition of perfect vacuum, i.e., absolute zero pressure can be attained at

- (a) a temperature of – 273.16°C
- (b) a temperature of 0°C
- (c) a temperature of 273 °K
- (d) a negative pressure and 0°C temperature
- (e) can't be attained.

Answer : a

25. Specific heat of air at constant pressure is equal to

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- (a) 0.17
- (b) 0.21
- (c) 0.24
- (d) 1.0
- (e) 1.41

Answer : c

26. Intensive property of a system is one whose value

- (a) depends on the mass of the system, like volume
- (b) does not depend on the mass of the system, like temperature, pressure, etc.
- (c) is not dependent on the path followed but on the state
- (d) is dependent on the path followed and not on the state
- (e) remains constant.

Answer : b

27. Characteristic gas constant of a gas is equal to

- (a) C/C_v
- (b) C_v/C_p
- (c) $C_p - C_v$
- (d) $C_p + C_v$
- (e) $C_p \times C_v$

Answer : c

28. The behaviour of gases can be fully determined by

- (a) 1 law
- (b) 2 laws
- (c) 3 laws
- (d) 4 laws

Answer : d

29. Boyle's law i.e. $pV = \text{constant}$ is applicable to gases under

- (a) all ranges of pressures
- (b) only small range of pressures
- (c) high range of pressures
- (d) steady change of pressures
- (e) atmospheric conditions.

Answer : b

30. The ratio of two specific heats of air is equal to

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- (a) 0.17
- (b) 0.24
- (c) 0.1
- (d) 1.41
- (e) 2.71.

Answer : d

31. Which law states that the internal energy of a gas is a function of temperature

- (a) Charles' law
- (b) Joule's law
- (c) Regnault's law
- (d) Boyle's law
- (e) there is no such law.

Answer : b

32. Which law states that the specific heat of a gas remains constant at all temperatures and pressures

- (a) Charles' Law
- (b) Joule's Law
- (c) Regnault's Law
- (d) Boyle's Law
- (e) there is no such law.

Answer : c

33. The same volume of all gases would represent their

- (a) densities
- (b) specific weights
- (c) molecular weights
- (d) gas characteristic constants
- (e) specific gravities.

Answer : c

34. An open system is one in which

- (a) mass does not cross boundaries of the system, though energy may do so
- (b) neither mass nor energy crosses the boundaries of the system
- (c) both energy and mass cross the boundaries of the system
- (d) mass crosses the boundary but not the energy
- (e) thermodynamic reactions do not occur.

Answer : c

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35. Gases have

- (a) only one value of specific heat
- (b) two values of specific heat
- (c) three values of specific heat
- (d) no value of specific heat
- (e) under some conditions one value and sometimes two values of specific heat.

Answer : b

36. According to which law, all perfect gases change in volume by $1/273$ th of their original volume at 0°C for every 1°C change in temperature when pressure remains constant

- (a) Joule's law
- (b) Boyle's law
- (c) Regnault's law
- (d) Gay-Lussac law
- (e) Charles' law.

Answer : e

37. According to Avogadro's Hypothesis

- (a) the molecular weights of all the perfect gases occupy the same volume under same conditions of pressure and temperature
- (b) the sum of partial pressure of mixture of two gases is sum of the two
- (c) product of the gas constant and the molecular weight of an ideal gas is constant
- (d) gases have two values of specific heat
- (e) all systems can be regarded as closed systems.

Answer : a

38. Work done in a free expansion process is

- (a) + ve
- (b) -ve
- (c) zero
- (d) maximum
- (e) minimum.

Answer : c

39. Extensive property of a system is one whose value

- (a) depends on the mass of the system like volume
- (b) does not depend on the mass of the system, like temperature, pressure, etc.
- (c) is not dependent on the path followed but on the state

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(d) is dependent on the path followed and not on the state

(e) is always constant.

Answer : a

40. The statement that molecular weights of all gases occupy the same volume is known as

- (a) Avogadro's hypothesis
- (b) Dalton's law
- (c) Gas law
- (d) Law of thermodynamics
- (e) Joule's law.

Answer : a

41. If a gas is heated against a pressure, keeping the volume constant, then work done will be equal to

- (a) + v
- (b) – ve
- (c) zero
- (d) pressure x volume
- (e) any where between zero and infinity.

Answer : c

42. To convert volumetric analysis to gravimetric analysis, the relative volume of each constituent of the flue gases is

- (a) divided by its molecular weight
- (b) multiplied by its molecular weight
- (c) multiplied by its density
- (d) multiplied by its specific weight
- (e) divided by its specific weight.

Answer : b

43. Properties of substances like pressure, temperature and density, in thermodynamic coordinates are

- (a) path functions
- (b) point functions
- (c) cyclic functions
- (d) real functions
- (e) thermodynamic functions.

Answer : b

44. An isolated system is one in which

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- (a) mass does not cross boundaries of the system, though energy may do so
- (b) neither mass nor energy crosses the boundaries of the system
- (c) both energy and mass cross the boundaries of the system
- (d) mass crosses the boundary but not the energy
- (e) thermodynamic reactions do not occur.

Answer : b

45. Which of the following quantities is not the property of the system

- (a) pressure
- (b) temperature
- (c) specific volume
- (d) heat
- (e) density.

Answer : d

46. Mixture of ice and water form a

- (a) closed system
- (b) open system
- (c) isolated system
- (d) heterogeneous system
- (e) thermodynamic system.

Answer : d

47. According to Avogadro's law, for a given pressure and temperature, each molecule of a gas

- (a) occupies volume proportional to its molecular weight
- (b) occupies volume proportional to its specific weight
- (c) occupies volume inversely proportional to its molecular weight
- (d) occupies volume inversely proportional to its specific weight
- (e) occupies same volume.

Answer : e

48. On weight basis, air contains following parts of oxygen

- (a) 21
- (b) 23
- (c) 25
- (d) 73
- (e) 79.

Answer : b

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49. Which of the following is the property of a system

- (a) pressure and temperature
- (b) internal energy
- (c) volume and density
- (d) enthalpy and entropy
- (e) all of the above.

Answer : e

50. Which of the following is not the intensive property

- (a) pressure
- (b) temperature
- (c) density
- (d) heat
- (e) specific volume.

Answer : d

51. Which of the following items is not a path function

- (a) heat
- (b) work
- (c) kinetic energy
- (d) vdp
- (e) thermal conductivity.

Answer : e

52. Heat and work are

- (a) point functions
- (b) system properties
- (c) path functions
- (d) intensive properties
- (e) extensive properties.

Answer : c

53. Work done in an adiabatic process between a given pair of end states depends on

- (a) the end states only
- (b) particular adiabatic process
- (c) the value of index n
- (d) the value of heat transferred
- (e) mass of the system.

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Answer : a

54. Which of the following parameters is constant for a mole for most of the gases at a given temperature and pressure

- (a) [enthalpy](#)
- (b) volume
- (c) mass
- (d) [entropy](#)
- (e) specific volume.

Answer : b

55. A perfect gas at 27°C is heated at constant pressure till its volume is double. The final temperature is

- (a) 54°C
- (b) 327°C
- (c) 108°C
- (d) 654°C
- (e) 600°C

Answer : b

56. The value of $n = 1$ in the polytropic process indicates it to be

- (a) reversible process
- (b) [isothermal process](#)
- (c) adiabatic process
- (d) irreversible process
- (e) free expansion process.

Answer : b

57. Solids and liquids have

- (a) one value of specific heat (ft) two values of specific heat
- (c) three values of specific heat
- (d) no value of specific heat
- (e) one value under some conditions and two values under other conditions.

Answer : a

58. If value of n is infinitely large in a polytropic process $pV^n = C$, then the process is known as constant

- (a) volume
- (b) pressure
- (c) temperature

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- (d) enthalpy
- (e) entropy.

Answer : a

59. The index of compression n tends to reach ratio of specific heats γ when

- (a) flow is uniform and steady
- (b) process is isentropic
- (c) process is isothermal
- (d) process is isentropic and specific heat does not change with temperature
- (e) process is isentropic and specific heat changes with temperature.

Answer : d

60. The term N.T.P. stands for

- (a) nominal temperature and pressure
- (b) natural temperature and pressure
- (c) normal temperature and pressure
- (d) normal thermodynamic practice
- (e) normal thermodynamic pressure.

Answer : c

61. A heat exchange process in which the product of pressure and volume remains constant is known as

- (a) heat exchange process
- (b) throttling process
- (c) isentropic process
- (d) adiabatic process
- (e) hyperbolic process.

Answer : e

62. Change in enthalpy of a system is the heat supplied at

- (a) constant pressure
- (b) constant temperature
- (c) constant volume
- (d) constant entropy
- (e) N.T.P. condition.

Answer : a

63. Zeroth law of thermodynamics

- (a) deals with conversion of mass and energy
- (b) deals with reversibility and irreversibility of process

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(c) states that if two systems are both in equilibrium with a third system, they are in thermal equilibrium with each other

(d) deals with heat engines

(e) does not exist.

Answer : c

64. In an isothermal process, the internal energy of gas molecules

(a) increases

(b) decreases

(c) remains constant

(d) may increase/decrease depending on the properties of gas

(e) shows unpredictable behaviour.

Answer : c

65. If a certain amount of dry ice is mixed with same amount of water at 80°C , the final temperature of mixture will be

(a) 80°C

(b) 0°C

(c) 40°C

(d) 20°C

(e) 60°C .

Answer : b

66. One watt is equal to

(a) 1 Nm/s

(b) 1 N/mt

(c) 1 Nm/hr

(d) 1 kNm/hr

(e) 1 kNm/mt .

Answer : a

67. Work done is zero for the following process

(a) constant volume

(b) free expansion

(c) throttling

(d) all Of the above

(e) none of the above.

Answer : d

68. The basis for measuring thermodynamic property of temperature is given by

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- (a) zeroth law of thermodynamics
- (b) first law of thermodynamics
- (c) second law of thermodynamics
- (d) third law of thermodynamics
- (e) Avogadro's hypothesis.

Answer : a

69. In a non-flow reversible process for which $p = (-3V + 15) \times 10^5 \text{ N/m}^2$, V changes from 1 m to 2 m³. The work done will be about

- (a) 100 x 10⁵ joules
- (b) 1 x 10⁵ joules
- (c) 10 x 10⁵ joules
- (d) 10 x 10⁵ kilo joules
- (e) 10 x 10⁴ kilo joules.

Answer : c

70. For which of the following substances, the gas laws can be used with minimum error

- (a) dry steam
- (b) wet steam
- (c) saturated steam
- (d) superheated steam
- (e) steam at atmospheric pressure.

Answer : d

71. On volume basis, air contains following parts of oxygen

- (a) 21
- (b) 23
- (c) 25
- (d) 77
- (e) 79.

Answer : a

72. The value of the product of molecular weight and the gas characteristic constant for all the gases in M.K.S. unit is

- (a) 29.27 kgfm/mol°K
- (b) 8314 kgfm/mol°K
- (c) 848 kgfm/mol°K
- (d) 427 kgfm/mol°K
- (e) 735 kgfm/mol°K.

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Answer : c

73. Universal gas constant is defined as equal to product of the molecular weight of the gas and

- (a) specific heat at constant pressure
- (b) specific heat at constant volume
- (c) ratio of two specific heats
- (d) gas constant
- (e) unity.

Answer : d

74. For which of the following substances, the internal energy and enthalpy are the functions of temperature only

- (a) any gas
- (b) saturated steam
- (c) water
- (d) perfect gas
- (e) superheated steam.

Answer : d

75. In a free expansion process

- (a) work done is zero
- (b) heat transfer is zero
- (c) both (a) and (b) above
- (d) work done is zero but heat increases
- (e) work done is zero but heat decreases.

Answer : c

76. The value of the product of molecular weight and the gas characteristic constant for all the gases in S.I. units is

- (a) 29.27 J/kmol^{°K}
- (b) 83.14J/kmol^{°K}
- (c) 848J/kmol^{°K}
- (d) All J/kmol ^{°K}
- (e) 735 J/kmol ^{°K}.

Answer : b

77. If a gas vapour is allowed to expand through a very minute aperture, then such a process is known as

- (a) free expansion

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- (b) hyperbolic expansion
- (c) adiabatic expansion
- (d) parabolic expansion
- (e) throttling.

Answer : e

78. If a fluid expands suddenly into vacuum through an orifice of large dimension, then such a process is called

- (a) free expansion
- (b) hyperbolic expansion
- (c) adiabatic expansion
- (d) parabolic expansion
- (e) throttling.

Answer : a

79. The specific heat of air increases with increase in

- (a) temperature
- (b) pressure
- (c) both pressure and temperature
- (d) variation of its constituents
- (e) air flow

Answer : a

80. Which of the following processes are thermodynamically reversible

- (a) throttling
- (b) free expansion
- (c) constant volume and constant pressure
- (d) hyperbolic and $pV = C$
- (e) isothermal and adiabatic.

Answer : e

81. In order that a cycle be reversible, following must be satisfied

- (a) free expansion or friction resisted expansion/compression process should not be encountered
- (b) when heat is being absorbed, temperature of hot source and working sub-stance should be same
- (c) when heat is being rejected, temperature of cold source and working sub-stance should be same
- (d) all of the above
- (e) none of the above.

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Answer : d

82. Which of the following processes is irreversible process

- (a) isothermal
- (b) adiabatic
- (c) throttling
- (d) all of the above
- (e) none of the above.

Answer : c

83. For a thermodynamic process to be reversible, the temperature difference between hot body and working substance should be

- (a) zero
- (b) minimum
- (d) maximum
- (d) infinity
- (e) there is no such criterion.

Answer : a

84. Minimum work in compressor is possible when the value of adiabatic index n is equal to

- (a) 0.75
- (b) 1
- (c) 1.27
- (d) 1.35
- (e) 2.

Answer : b

85. A gas is compressed in a cylinder by a movable piston to a volume one-half its original volume. During the process 300 kJ heat left the gas and internal energy remained same. The work done on gas in Nm will be

- (a) 300 Nm
- (b) 300,000 Nm
- (c) 30 Nm
- (d) 3000 Nm
- (e) 30,000 Nm.

Answer : b

86. Molecular volume of any perfect gas at $600 \times 10^3 \text{ N/m}^2$ and 27°C will be

- (a) $4.17 \text{ m}^3/\text{kgmol}$

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- (b) 400 m³/kg mol
- (c) 0.15 m³/kg mol
- (d) 41.7 m³/kg mol
- (e) 417m³/kgmol.

Answer : a

87. The more effective way of increasing efficiency of Carnot engine is to

- (a) increase higher temperature
- (b) decrease higher temperature
- (c) increase lower temperature
- (d) decrease lower temperature
- (e) keep lower temperature constant.

Answer : d

88. For reversible adiabatic process, change in entropy is

- (a) maximum
- (b) minimum
- (c) zero
- (d) unpredictable
- (e) negative

Answer : c

89. Entropy change depends on

- (a) heat transfer
- (b) mass transfer
- (c) change of temperature
- (d) thermodynamic state
- (e) change of pressure and volume.

Answer : a

90. Isochoric process is one in which

- (a) free expansion takes place
- (b) very little mechanical work is done by the system
- (c) no mechanical work is done by the system
- (d) all parameters remain constant
- (e) mass and energy transfer do not take place.

Answer : c

91. Energy can neither be created nor destroyed but can be converted from one form to other is inferred from

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- (a) zeroth law of thermodynamic
- (b) first law of thermodynamics
- (c) second law to thermodynamics
- (d) basic law of thermodynamics
- (e) claussius statement.

Answer : b

92. First law of thermodynamics furnishes the relationship between

- (a) heat and work
- (b) heat, work and properties of the system
- (c) various properties of the system
- (d) various thermodynamic processes
- (e) heat and internal energy.

Answer : b

93. According to first law of thermodynamics

- (a) work done by a system is equal to heat transferred by the system
- (b) total internal energy of a system during a process remains constant
- (c) internal energy, enthalpy and entropy during a process remain constant
- (d) total energy of a system remains constant
- (e) entropy of a system remains constant.

Answer : d

94. In an isothermal process, the internal energy

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

Answer : c

95. Change in enthalpy in a closed system is equal to heat transferred if the reversible process takes place at constant

- (a) pressure
- (b) temperature
- (c) volume
- (d) internal energy
- (e) entropy.

Answer : a

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96. Change in internal energy in a closed system is equal to heat transferred if the reversible process takes place at constant

- (a) pressure
- (b) temperature
- (c) volume
- (d) internal energy
- (e) entropy.

Answer : c

97. Total heat of a substance is also known as

- (a) internal energy
- (b) entropy
- (c) thermal capacity
- (d) enthalpy
- (e) thermal conductance.

Answer : d

98. First law of thermodynamics

- (a) enables to determine change in internal energy of the system
- (b) does not help to predict whether the system will or not undergo a change
- (c) does not enable to determine change in entropy
- (d) provides relationship between heat, work and internal energy
- (e) all of the above.

Answer : e

99. According to first law of thermodynamics

- (a) mass and energy are mutually convertible
- (b) Carnot engine is most efficient
- (c) heat and work are mutually convertible
- (d) mass and light are mutually convertible
- (e) heat flows from hot substance to cold substance.

Answer : c

100. Addition of heat at constant pressure to a gas results in

- (a) raising its temperature
- (b) raising its pressure
- (c) raising its volume
- (d) raising its temperature and doing external work
- (e) doing external work.

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Answer : d

101. Measurement of temperature is based on

- (a) thermodynamic properties
- (b) zeroth law of thermodynamics
- (c) first law of thermodynamics
- (d) second law of thermodynamics
- (e) joule's law.

Answer : b

102. Carnot cycle has maximum efficiency for

- (a) reversible engine
- (b) irreversible engine
- (c) new engine
- (d) petrol engine
- (e) diesel engine.

Answer : a

103. Carnot cycle efficiency depends upon

- (a) properties of the medium/substance used
- (b) condition of engine
- (c) working condition
- (d) temperature range of operation
- (e) effectiveness of insulating material around the engine.

Answer : d

104. An engine operates between temperatures of 900°K and 200°K and another engine between T_2 and 400°K . For both to do equal work, value of T_2 will be

- (a) 650°K
- (b) 600°K
- (c) 625°K
- (d) 700°K
- (e) 750°K .

Answer : a

105. Carnot cycle efficiency is maximum when

- (a) initial temperature is 0°K
- (b) final temperature is 0°K
- (c) difference between initial and final temperature is 0°K
- (d) final temperature is 0°C

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(e) initial temperature is minimum possible.

Answer : b

106. If heat be exchanged in a reversible manner, which of the following property of the working substance will change accordingly

- (a) temperature
- (b) enthalpy
- (c) internal energy
- (d) entropy
- (e) all of the above.

Answer : d

107. Which of the following represents the perpetual motion of the first kind

- (a) engine with 100% thermal efficiency
- (b) a fully reversible engine
- (c) transfer of heat energy from low temperature source to high temperature source
- (d) a machine that continuously creates its own energy
- (e) production of energy by temperature differential in sea water at different levels.

Answer : d

108. If a system after undergoing a series of processes, returns to the initial state then

- (a) process is thermodynamically in equilibrium
- (b) process is executed in closed system cycle
- (c) its entropy will change due to irreversibility
- (d) sum of heat and work transfer will be zero
- (e) no work will be done by the system.

Answer : d

109. An actual engine is to be designed having same efficiency as the Carnot cycle. Such a proposition is

- (a) feasible
- (b) impossible
- (c) possible
- (d) possible, but with lot of sophistications
- (e) desirable.

Answer : d

110. In a Carnot cycle, heat is transferred at

- (a) constant pressure

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- (b) constant volume
- (c) constant temperature
- (d) constant enthalpy
- (e) any one of the above.

Answer : c

111. A manufacturer claims to have a heat engine capable of developing 20 h.p. by receiving heat input of 400 kcal/mt and working between the temperature limits of 227° C and 27° C. His claim is

- (a) justified
- (b) not possible
- (c) may be possible with lot of sophistications
- (d) cost will be very high
- (e) theroretically possible.

Answer : b

112. A diathermic wall is one which

- (a) prevents thermal interaction
- (b) permits thermal interaction
- (c) encourages thermal interaction
- (d) discourages thermal interaction
- (e) does not exist.

Answer : b

113. The door of a running refrigerator inside a room was left open. Which of the following statements is correct?

- (a) The room will be cooled to the temperature inside the refrigerator.
- (b) The room will be cooled very slightly.
- (c) The room will be gradually warmed up.
- (d) The temperature of the air in room will remain unaffected.
- (e) any one of above is possible depending on the capacity.

Answer : c

114. An adiabatic wall is one which

- (a) prevents thermal interaction
- (b) permits thermal interaction
- (c) encourages thermal interaction
- (d) discourages thermal interaction
- (e) dos not exist.

Answer : a

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115. Compressed air coming out from a punctured football

- (a) becomes hotter
- (b) becomes cooler¹
- (c) remains at the same temperature
- (d) may become hotter or cooler depend-ing upon the humidity of the surround-ing air
- (e) attains atmospheric temperature.

Answer : b

116. During throttling process

- (a) heat exchange does not take place
- (b) no work is done by expanding steam
- (c) there is no change of internal energy of steam
- (d) all of the above
- (e) entropy decreases.

Answer : d

117. Water contained in a beaker can be made to boil by passing steam through it

- (a) at atmospheric pressure
- (b) at a pressure below the firuosphejric pressure
- (c) at a pressure greater than atmospheric pressure
- (d) any pressure
- (e) not possible.

Answer : c

118. The energy of molecular motion appears as

- (a) heat
- (b) potential energy
- (c) surface tension
- (d) friction
- (e) increase in pressure.

Answer : a

119. The unit'of universal gas constant is

- (a) watts/°K
- (b) dynes/°C
- (c) ergscm/°K
- (d)erg/°K
- (e) none of the above.

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Answer : d

120. A sudden fall in the barometer reading is a sign of approaching

- (a) fine weather
- (b) rains
- (c) storm
- (d) cold wave
- (e) hot wave.

Answer : c

121. Calorie is a measure of

- (a) specific heat
- (b) quantity of heat
- (c) thermal capacity
- (d) entropy
- (e) work.

Answer : b

122. 1 kgf/cm² is equal to

- (a) 760 mm Hg
- (b) zero mm Hg
- (c) 735.6 mm Hg
- (d) 1 mm Hg
- (e) 100 mm Hg.

Answer : c

123. One barometric pressure or 1 atmospheric pressure is equal to

- (a) 1 kgf/cm²
- (b) 1.033 kgf/cm²
- (c) 0 kgf/cm²
- (d) 1.0197 kgf/cm²
- (e) 100 kgf/cm².

Answer : b

124. Barometric pressure is equal to

- (a) 760 mm Hg
- (b) zero mm Hg
- (c) 735.6 mm Hg
- (d) 1 mm Hg

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(e) 100mm Hg.

Answer : a

125. The first law of thermodynamics is the law of

- (a) conservation of mass
- (b) conservation of energy
- (c) conservation of momentum
- (d) conservation of heat
- (e) conservation of temperature.

Answer : b

126. Kelvin Planck's law deals with

- (a) conservation of heat
- (b) conservation of work
- (c) conversion of heat into work
- (d) conversion of work into heat
- (e) conservation of mass.

Answer : c

127. A perpetual motion machine is

- (a) a thermodynamic machine
- (b) a non-thermodynamic machine
- (c) a hypothetical machine
- (d) a hypothetical machine whose operation would violate the laws of thermodynamics
- (e) an inefficient machine.

Answer : d

128. According to Clausius statement of second law of thermodynamics

- (a) heat can't be transferred from low temperature source to high temperature source
- (b) heat can be transferred from low temperature to high temperature source by using refrigeration cycle.
- (c) heat can be transferred from low temperature to high temperature source if COP of process is more than unity
- (d) heat can't be transferred from low temperature to high temperature source without the aid of external energy
- (e) all of the above.

Answer : d

129. Which of the following is an irreversible cycle

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- (a) carnot
- (b) Stirling
- (c) ericsson
- (d) all of the above
- (e) none of the above.

Answer : e

130. Thermal power plant works on

- (a) Carnot cycle
- (b) Joule cycle
- (d) Rankine cycle
- (d) Otto cycle
- (e) Brayton cycle.

Answer : c

131. Otto cycle consists of following four processes

- (a) two isothermals and two isentropics
- (b) two isentropics and two constant volumes
- (c) two isentropics, one constant volume and one constant pressure
- (d) two isentropics and two constant pressures
- (e) none of the above.

Answer : b

132. For same compression ratio and for same heat added

- (a) Otto cycle is more efficient than Diesel cycle
- (b) Diesel cycle is more efficient than Otto cycle
- (c) efficiency depends on other factors
- (d) both Otto and Diesel cycles are equally efficient
- (e) none of the above.

Answer : a

133. The efficiency of a Carnot engine depends on

- (a) working substance
- (b) design of engine
- (c) size of engine
- (d) type of fuel fired
- (e) temperatures of source and sink.

Answer : e

134. The efficiency of Carnot cycle is maximum for

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- (a) gas engine
- (b) well lubricated engine
- (c) petrol engine
- (d) steam engine
- (e) reversible engine.

Answer : e

135. Diesel cycle consists of following four processes

- (a) two isothermals and two isentropics
- (b) two isentropics, and two constant volumes.
- (c) two isentropics, one constant volume and one constant pressure
- (d) two isentropics and two constant pressures
- (e) none of the above.

Answer : c

136. Carnot cycle is

- (a) a reversible cycle (ft) an irreversible cycle
- (c) a semi-reversible cycle
- (d) a quasi static cycle
- (e) an adiabatic irreversible cycle.

Answer : a

137. If both Stirling and Carnot cycles operate within the same temperature limits, then efficiency of Stirling cycle as compared to Carnot cycle

- (a) more
- (b) less
- (c) equal
- (d) depends on other factors
- (e) none of the above.

Answer : c

138. A cycle consisting of two adiabatics and two constant pressure processes is known as

- (a) Otto cycle
- (b) Ericsson cycle
- (c) Joule cycle
- (d) Stirling cycle
- (e) Atkinson cycle.

Answer : c

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139. Stirling and Ericsson cycles are

- (a) reversible cycles
- (b) irreversible cycles
- (c) quasi-static cycles
- (d) semi-reversible cycles
- (e) adiabatic irreversible cycles.

Answer : a

140. Brayton cycle consists' of following four processes

- (a) two isothermals and two isentropics
- (b) two isentropics and two constant volumes
- (c) two isentropics, one constant volume and one constant pressure
- (d) two isentropics and two constant pressures
- (e) none of the above.

Answer : d

141. Reversed joule cycle is called

- (a) Carnot cycle
- (b) Rankine cycle
- (c) Brayton cycle
- (d) Bell Coleman cycle
- (e) Dual cycle.

Answer : c

142. Which of the following cycles is not a reversible cycle

- (a) Carnot
- (b) Ericsson
- (c) Stirling
- (d) Joule
- (e) none of the above.

Answer : e

143. The efficiency of Diesel cycle with decrease in cut off

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

Answer : a

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144. The cycle in which heat is supplied at constant volume and rejected at constant pressure is known as

- (a) Dual combustion cycle
- (b) Diesel cycle
- (c) Atkinson cycle
- (d) Rankine cycle
- (e) Stirling cycle.

Answer : c

145. Which of the following cycles has maximum efficiency

- (a) [Rankine](#)
- (b) Stirling
- (c) Carnot
- (d) Brayton
- (e) Joule.

Answer : c

146. The ideal efficiency of a Brayton cycle without regeneration with increase in pressure ratio will

- (a) increase
- (b) decrease
- (c) remain unchanged
- (d) increase/decrease depending on application
- (e) unpredictable.

Answer

:

a

147. The following cycle is used for air craft refrigeration

- (a) Brayton cycle
- (b) Joule cycle
- (c) Carnot cycle
- (d) Bell-Coleman cycle
- (e) Reversed-Brayton cycle.

Answer : e

148. The thermodynamic difference between a Rankine cycle working with saturated steam and the Carnot cycle is that

- (a) carnot cycle can't work with saturated steam
- (b) heat is supplied to water at temperature below the maximum temperature of the cycle
- (c) a rankine cycle receives heat at two places

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- (d) rankine cycle is hypothetical
- (e) none of the above.

Answer : b

149. The ideal efficiency of a Brayton cycle with regeneration, with increase in pressure ratio will

- (a) increase
- (b) decrease
- (c) remain unchanged
- (d) increase/decrease depending on application
- (e) unpredictable. "

Answer : b

150. Gas turbine cycle consists of

- (a) two isothermals and two isentropics
- (b) two isentropics and two constant volumes
- (c) two isentropics, one constant volume and one constant pressure
- (d) two isentropics and two constant pressures
- (e) none of the above.

Answer : d