85/2015

1. Zeroth law of thermodynamics defines :
    - (A) internal energy
    - (B) temperature
    - (C) enthalpy
    - (D) pressure

2. Otto cycle is also known as :
    - (A) constant temperature cycle
    - (B) constant temperature and pressure cycle
    - (C) constant volume cycle
    - (D) constant pressure cycle

3. The Kinematic viscosity can be defined as the :
    - (A) ratio of absolute viscosity to the density of the liquid
    - (B) ratio of density of the liquid to the absolute viscosity
    - (C) product of absolute viscosity and density of the liquid
    - (D) product of absolute viscosity and mass of the liquid

4. The action of a centrifugal pump is the :
    - (A) reverse of a mixed flow type turbine
    - (B) reverse of propeller type turbine
    - (C) reverse of a radially inward flow reaction turbine
    - (D) reverse of a reciprocating pump

5. Basic closed cycle for Gas Turbine is :
    - (A) Carnot cycle
    - (B) Rankine cycle
    - (C) Stirling cycle
    - (D) Brayton cycle

6. The quantity of radiation heat flux depends on :
    - (A) The shape of the body only
    - (B) Temperature of the body only
    - (C) Area of the body only
    - (D) All of the above

7. Interior wall is at 1000°C The wall thickness is 0.6 m, it is 1 m wide and 1.5 m broad of material with thermal conductivity 0.4 W/m °K. The temperature of outside wall is 200°C Then the thermal resistance is :
    - (A) 1°K/W
    - (B) 2°K/W
    - (C) 1.8°K/W
    - (D) 1.5°K/W

A

3

[P.T.O.]

8. According to Stefan-Boltzmann law, the total radiation from a black body per second per unit area is _____ fourth power of the absolute temperature.

    (A) equal to   (B) directly proportional to

    (C) inversely proportional to   (D) exponential to

9. Forging results in the following :

    (A) reduces the mechanical properties   (B) improves the grain flow

    (C) creates internal defects   (D) all of the above

10. In Electrical discharge machining :

    (A) the work piece and tool must both conduct electricity

    (B) only the work piece conducts electricity

    (C) only the tool conducts electricity

    (D) both tool and work piece should not conduct electricity

11. In a tensile test, necking starts at :

    (A) lower yield stress   (B) upper yield stress

    (C) ultimate tensile stress   (D) just before fracture

12. The fatigue strength of mild steel is :

    (A) equal to its tensile strength   (B) more than its tensile strength

    (C) equal to its yield strength   (D) lower than its yield strength

13. The power transmitted by belt drive is designed on the basis of :

    (A) angle of contact on the larger pulley

    (B) angle of contact on the smaller pulley

    (C) average angle of contact on the two pulleys

    (D) angle of contact on the driver pulley, whether smaller or larger

14. Dynamometer is a device for measuring :

    (A) torque exerted by the machine

    (B) power developed by the machine

    (C) power absorbed by the machine

    (D) all of the above

15. The type of gears used to connect two non-parallel non-intersecting shafts are :

    (A) straight spur gears   (B) straight bevel gears

    (C) cross helical gears   (D) spiral gears

16. Ammonia, which is used as a common refrigerant, has a normal boiling point of :
    (A) −39.6°C   (B) 31.7°C
    (C) −3.1°C   (D) −33.3°C

17. Specific humidity (humidity ratio) is the ratio of :
    (A) Mass of water vapour present per kg of dry air
    (B) Mass of water vapour present in unit volume of air
    (C) Actual mass of water vapour in a given volume to the mass of water vapour if the air is saturated at the same temperature
    (D) None of the above

18. Calorific value of dry wood is :
    (A) 3400 kcal/kg   (B) 1300 kcal/kg
    (C) 9100 kcal/kg   (D) 2500 kcal/kg

19. Reciprocating pump falls under the category of :
    (A) Rotodynamic pumps
    (B) Dynamic-pressure pumps
    (C) Positive displacement pumps
    (D) All of the above

20. In reaction turbines, the pressure at the inlet of the turbine :
    (A) is much higher than that at the outlet
    (B) is much lower than that at the outlet
    (C) is equal to the outlet pressure
    (D) is initially lower than the outlet and then increases

21. Hysteresis loss in electrical systems is directly proportional to the :
    (A) Frequency and flux density
    (B) Frequency, and flux density to the power 1.6
    (C) Square of frequency, and flux density to the power 1.6
    (D) Square of frequency, and square of flux density

22. If speed of dc motor increases with load torque, then it is a :
    (A) Series motor   (B) Brushless motor
    (C) Cumulatively compounded motor   (D) Differentially compounded motor

23. The power electronic switch used for a Sine-PWM inverter can be :

    (A) SCR   (B) TRIAC

    (C) IGBT   (D) All of these

24. Which of the following statement is correct for a common base transistor amplifier?

    (A) High current gain and high output impedance

    (B) Low input impedance and high output impedance

    (C) High input impedance and low output impedance

    (D) High voltage gain and low output impedance

25. If common base current gain $\alpha = 0.99$, $I_{CBO} = 5\mu A$, $I_B = 50 \ \mu A$ for a bipolar transistor, then value or collector current Ic will be :

    (A) 5.5 mA   (B) 4.5 mA

    (C) 5.0 mA   (D) 2.5 mA

26. A second order RLC series circuit behaves like an inductive circuit :

    (A) At resonant frequency

    (B) Below resonant frequency

    (C) Above resonant frequency

    (D) At lower half power frequency

27. 3- phase transformer combinations which cannot be operated in parallel are :

    (A) Star- star & delta- delta

    (B) Star-delta & delta-star

    (C) Star-star & star-delta

    (D) Delta-delta & star-star

28. Mho relay is normally used for the protection of :

    (A) Long transmission line

    (B) Short transmission line

    (C) Transformer

    (D) DC motors

29. A 1 mA d' Arsonval ammeter has resistance of 100 ohm. The value of the series resistance required to convert it to a (0–50) V Voltmeter is :

    (A) 1 k Ω (B) 49.9 k Ω

    (C) 4.9 k Ω (D) 10 k Ω

30. During frequency measurement Lissajous pattern on oscilloscope has 2 horizontal tangencies and 5 vertical tangencies when the frequency of the horizontal input is 1 kHz. Then the vertical frequency will be :

    (A) 5.0 kHz
    (B) 2.5 kHz
    (C) 4.0 kHz
    (D) 400 Hz

31. A two port network is defined by the following equations, $I_1 = V_1 - 0.5V_2$, $I_2 = -V_1 + V_2$, Z parameters are given by Z = :

    (A) $[1 \ -0.5; \ -1 \ 1]$
    (B) $[2 \ 1; \ 2 \ 2]$
    (C) $[1 \ -2; \ -1 \ 1]$
    (D) $[1 \ 2; \ 2 \ 1]$

32. A capacitor of 10 μF is connected to a 100 V dc source through a series resistance of 10 $k\Omega$. It will be fully charged in :

    (A) 0.01 s
    (B) 0.1 s
    (C) 0.158 s
    (D) 0.5 s

33. A step up chopper supplying a load at 500V and input is 200V. The off time of switch is $20\,\mu$ sec, inductor current is continuous and ripple free. The frequency of chopper in kHz is :

    (A) 20 kHz
    (B) 25 kHz
    (C) 50 kHz
    (D) 100 kHz

34. The two windings of a 200/100 V transformers are connected in series and results in net inductances of 70 mH and 30 mH in different connections Assuming $L_1 = 4L_2$, the coupling coefficient is :

    (A) 1
    (B) 0.5
    (C) 0.25
    (D) 0.428

35. Among the following materials cable glands are made from:

    (i) plastic
    (ii) Brass
    (iii) Aluminium
    (iv) Stainless steel
    (A) All the above
    (B) (ii) & (iv)
    (C) (ii) (iii) & (iv)
    (D) (iv) only

36. A voltage source with source impedance $Zs = 0.3 + j0.4\Omega$ is connected to a resistive load. Then the load resistance for maximum power transfer is :

    (A) 0.3 Ω
    (B) 0.4 Ω
    (C) 0.7 Ω
    (D) 0.5 Ω

37. The maximum allowable earth resistance for major substations is :

    (A) 1 Ω
    (B) 5 Ω
    (C) 25 Ω
    (D) 0 Ω

38. The line voltage V_{RY} is $400\angle 0$ V for a balanced 3-ph star-connected load with phase sequence RYB. Then the phase voltage V_{BN} is given by :

    (A) $230\angle 90$ (B) $230\angle -120$

    (C) $230\angle -90$ (D) $400\angle 30$

39. A 50 MVA, 22 kV synchronous generator has 0.2 Pu synchronous reactance. The pu synchronous reactance on the base values of 100 MVA and 11 kV is :

    (A)   1.6   (B)   0.1

    (C)   4.0   (D)   0.2

40. A thyrite type lightning arrestor :

    (i)   uses a Silicon Carbide based material

    (ii)   acts as a nonlinear resistor

    (iii)   offers a low resistance path to the surge appearing in the line

    (iv)   returns surge back to the source

    Among the above four statements.

    (A)   All are correct   (B)   (i) and (iv) are correct

    (C)   (i), (ii), and (iii) are correct   (D)   (ii), (iii) and (iv) are correct

41. Which of the following wood is more resistant to white ants?

    (A)   Teak   (B)   Sal

    (C)   Deodar   (D)   Chir

42. A steel rod of $2cm^2$ area and 1m in height is subjected to a pull of 40000 N. If Young's modulus is 2×10^5 N/mm^2, the elongation of the rod will be :

    (A)   10 mm   (B)   100 mm

    (C)   1 mm   (D)   0.1 mm

43. The elastic constant which gives the relation between pressure and change in volume :

    (A)   Young's modulus   (B)   Rigidity modulus

    (C)   Bulk modulus   (D)   Poisson's Ratio

44. Where the intensity of load is constant, Bending Moment will vary :

    (A)   Constant   (B)   Linearly

    (C)   Parabolically   (D)   Cubically

45. Moment of Inertia of triangular section with base b and height h about base will be :

    (A) $bh^3/3$ (B) $bh^3/12$

    (C) $bh^3/36$ (D) $bh^3/6$

46. The shear stress in a circular shaft of radius r subjected to torsion is maximum :

    (A) at centre of shaft
    (B) at a distance r/2 from centre of shaft
    (C) at surface of shaft
    (D) at a distance r/2 from surface of shaft

47. A simply supported rectangular beam is loaded transversely, the maximum tensile stress develops at :

    (A) bottom fibre
    (B) top fibre
    (C) neutral axis
    (D) no tensile stress

48. A surface vibrator for concrete compaction is preferred for all the following except :

    (A) raft foundation
    (B) columns
    (C) road pavements
    (D) R.C.C. slabs

49. Maximum gross pressure which the soil can carry safely without shear failure :

    (A) Gross safe bearing capacity
    (B) Net safe bearing capacity
    (C) Ultimate Bearing capacity
    (D) Net ultimate bearing capacity

50. Type of foundation suitable when the load is heavy and the soil is highly compressible :

    (A) Mat foundation
    (B) Pile foundation
    (C) Pier foundation
    (D) Well foundation

51. The property of cement tested by using Lechatelier apparatus :

    (A) consistency
    (B) setting time
    (C) compressive strength
    (D) soundness

52. The discharge through a V-notch varies as :

    (A) H
    (B) $H^{1/2}$
    (C) $H^{3/2}$
    (D) $H^{5/2}$

53. Hydraulic jump is used for :

    (A) increasing the depth of flow
    (B) reducing the energy of flow
    (C) decreasing the velocity of flow
    (D) reducing the turbulence

54. An example of steady non-uniform flow is :

    (A) motion of a river around bridge piers
    (B) steadily increasing flow through a pipe
    (C) steadily decreasing flow through a reducing section
    (D) constant discharge through a long, straight tapering pipe

55. For steady rotational flow of a fluid Bernoulli's equation :

   (A) cannot be derived

   (B) can be derived for the entire flow field

   (C) can be derived only if the fluid is incompressible

   (D) can be derived only for the points lying on the same stream

56. As per ISI, concrete should be cured under a humidity of :

   (A) 20%   (B) 98%

   (C) 50%   (D) 90%

57. Low heat cement is suitable for :

   (A) thin structure   (B) thick structure

   (C) R.C.C. structure   (D) underwater structure

58. For construction of structures under water, the lime used is :

   (A) fat lime   (B) quick lime

   (C) hydraulic lime   (D) pure lime

59. Efflorescence is caused by :

   (A) low silica content of bricks   (B) presence of alkali salts

   (C) high pH of water used for pugging (D) all the above

60. Stone generally preferred for railway ballast is :

   (A) basalt   (B) marble

   (C) slate   (D) sand stone

61. Fluid milk plants should be located near the :

   (A) Dairy Farm   (B) Milk consumption area

   (C) Industrial area   (D) None of these

62. Which among the following is the most suited material for the floor of the dairy plant?

   (A) Mandana Tiles   (B) Concrete Tiles

   (C) Marble   (D) Stainless steel

63. Which type of pump is suited for transfer of raw milk from reception dock to storage silos?

   (A) Rotary   (B) Reciprocating

   (C) High pressure   (D) Centrifugal

64. Cyclone separators are associated with :
    (A) Cream separator
    (B) Drum drier
    (C) Spray drier
    (D) Tray drier

65. In evaporators used in food industry, the heating medium used is mainly :
    (A) Hot water
    (B) Steam
    (C) Hot air
    (D) Hot oil

66. Reverse osmosis technique is mainly used for :
    (A) Concentration
    (B) Filtration
    (C) Separation
    (D) None of these

67. In CIP system, protein residue is best cleaned by :
    (A) Alkali
    (B) Steam
    (C) Acid
    (D) Hot water

68. Final stage of treatment in a Mechanical can washer is treatment with :
    (A) Cold water
    (B) Sanitizer
    (C) Warm water
    (D) Steam

69. The leak proofness of milk pouches are tested by :
    (A) Squeeze test
    (B) Tear Test
    (C) Drop test
    (D) All of these

70. Homogenization divides the fat globules to the size :
    (A) $5 - 10 \ \mu M$
    (B) $< 10 \ \mu M$
    (C) $> 10 \ \mu M$
    (D) $< 1 \ \mu M$

71. The process of removal of bacteria from milk by centrifugal force is called :
    (A) Centrifugation
    (B) Bactofugation
    (C) Fumigation
    (D) None of these

72. Ice thickness controller is used in :
    (A) Ice Bank Tank
    (B) Butter cold store
    (C) Ice cream Freezer
    (D) Milk chilling room

73. Milk cold room is maintained at :
    (A) 1°C
    (B) – 50°C
    (C) – 20°C
    (D) 20°C

74. Double 'O' vat is related to :

    (A) Butter making   (B) Cheese making

    (C) Cream separation   (D) Sterilization

75. A device widely used for removing condensate is :

    (A) Condenser   (B) Evaporator

    (C) Steam trap   (D) Filter

76. The optimum temperature for efficient homogenization is :

    (A) 10 °C   (B) 45 °C

    (C) 25 °C   (D) 65 °C

77. The steam required to evaporate one kg of water from milk is around ——————— in a triple effect evaporator.

    (A) 0.4 kg   (B) 1.0 kg

    (C) 1.2 kg   (D) 2.0 kg

78. AISI 304 steel consists of :

    (A) 18% Nickel and 80% Chromium   (B) 18% Chromium and 8% Nickel

    (C) 10% Nickel and 10% Chromium   (D) None of these

79. The speed of rotation in a centrifugal atomizer is :

    (A) 1000 – 2000 rpm   (B) 30,000 rpm

    (C) 50,000 rpm   (D) 6,000 – 20,000 rpm

80. The time – temperature combination for HTST pasteurization is :

    (A) 63 °C / 15 seconds   (B) 63 °C/30 minutes

    (C) 72 °C/ 15 seconds   (D) 72 °C/30 minutes

81. Recently, WHO – India has launched IVR 2020 programme to protect and increase the number of :

    (A) Tigers   (B) One –horn Rhinos

    (C) Indian Bustard   (D) Asiatic Lions

82. Which among the following dates is observed as Anti – Leprosy Day in India?

    (A) January 30   (B) February 15

    (C) March 11   (D) April 6

83. Who among the following was first cinematographer to be chosen for the prestigious Dhada Saheb Phalke award?

(A) Govind Nihalani
(B) B.S. Lokanath
(C) B.C. Gowrishankar
(D) V.K. Murthy

84. The inventor of the World Wide Web has marked the 25th anniversary of his creation by calling for a 'Magna Carta' bill of rights to protect its users. Identify him from the given options :

(A) Tim – Berners – Lee
(B) Stuart Harris
(C) Robert Taylor
(D) Claude Shannon

85. Wisden's Five Cricketer of the year of 2013 has been awarded to :

(A) Virat Kohli
(B) Rohit Sharma
(C) Shikar Dhawan
(D) Suresh Raina

86. Lee Kun–hee, who is facing an arrest warrant in a 1.4 million dollar cheating case is chairman of :

(A) Nokia
(B) Samsung
(C) LG
(D) IBM

87. "Jens stoltenberg" who has been elected as NATO chief is the former Prime Minister of :

(A) Norway
(B) Russia
(C) Germany
(D) USA

88. In context to astronomy, "Charkilo" which is in news recently is :

(A) comet
(B) miniature planet
(C) meteorite
(D) asteroid

89. Who shared the Best actor National Award of the year for 2013?

(A) Fahed Fazil
(B) Lal
(C) Suraj Venjaramoodu
(D) Jayaram

90. The state which is known as 'Jwel of India' :

(A) Meghalaya
(B) Arunachal Pradesh
(C) Assam
(D) Manipur

91. Who was considered as father of Demography?

(A) Dr. Montek Singh
(B) Jim yong kim
(C) Shyam Prasad Gupta
(D) John Graund

92. Who was the viceroy of India When Congress formed?

   (A) Lord Curzon   (B) Lord Delhousie

   (C) Lord Dufferine   (D) Lord Mayo

93. Jallianwallabag Tragedy was occurred in :

   (A) 1919   (B) 1911

   (C) 1909   (D) 1921

94. The river called as Ganga of Kerala :

   (A) Kabani   (B) Kaveri

   (C) Bharathappuzha   (D) Periyar

95. The colour of Red soil is due to the presence of :

   (A) Carbon Sulphate   (B) Iron oxide

   (C) Methanol   (D) Copper oxide

96. Inhabitants of Kurinji during Sangam period is knows as :

   (A) Uzhavar   (B) Idayar

   (C) Meenavar   (D) Vettuvar

97. The amendment of our constitution that made education as a fundamental right :

   (A) 86   (B) 84

   (C) 68   (D) 72

98. The only congress session presided by Mahatma Gandhi :

   (A) Nagpur   (B) Belgam

   (C) Poona   (D) Bombay

99. Dharsanamala was the famous work of :

   (A) Kumaranasan   (B) Dr. Palpu

   (C) Sree Narayana Guru   (D) Ayyankali

100. Pallivasal Hydro Electric scheme was inaugurated during the period of :

   (A) Chithira Thirunal Balarama Varma   (B) Dharma Raja

   (C) Swathi Thirunal   (D) Moolam Thirunal