164/2016

Maximum : 100 marks

Time : 1 hour and 15 minutes

1. The maximum voltage E_{max} is given by :

   (A) $N\phi_m w$ (B) $2\pi\phi_m$

   (C) $\phi_m N 2\pi$ (D) $w\phi_m$

2. Maximum value is greater than RMS value by the factor :

   (A) $\sqrt{3}$ (B) $\frac{\sqrt{3}}{2}$

   (C) $\sqrt{2}$ (D) $\frac{3}{2}$

3. Apparent power in a purely resistive circuit is :

   (A) zero (B) $V \times I$

   (C) $VI \sin\phi$ (D) $VI \cos\phi$

4. In a purely capacitive circuit voltage is :

   (A) leading the current (B) in phase with current

   (C) anti phase with current (D) lagging the current

5. The equation for 3 phase power is :

   (A) $3V_L I_L \cos\phi$ (B) $\sqrt{3} V_{ph} I_{ph} \cos\phi$

   (C) $\sqrt{3} V_L I_L \cos\phi$ (D) None

6. Equation for induced emf in a transformer is :

   (A) $4.4\ F N_2$ (B) $4.44\phi_m F N_2$

   (C) $4.44 F N_1 N_2$ (D) $4.4\phi_m N_1 N_2$

7. The reason for making laminations for core construction is :

   (A) to reduce weight (B) to reduce cu. loss

   (C) to reduce lrm loss (D) to reduce hysterisis loss

8. The transformation ratio of a transformer is :

(A) $\frac{V_1}{V_2}$ (B) $\frac{I_1}{I_2}$

(C) $\frac{N_1}{N_2}$ (D) $\frac{V_1}{I_1}$

9. An autor transformer transfers power:

(A) inductively only (B) conductively only

(C) both inductively and conductively (D) not transfers

10. When transformation ratio of an auto transformer is 0.8 and input is 3 kW the power transferred conductively from primary to secondary is :

(A) 0.6 (B) 0.8

(C) 1.2 (D) 2.4

11. The function of the commutator in a DC generator is :

(A) to induce DC voltage (B) to convert DC into AC

(C) to convert AC into DC (D) to induce AC voltage

12. When coil span equal to pole pitch the winding is :

(A) short pitched (B) fractional pitched

(C) dull pitched (D) over pitched

13. For a simplex lap wound generator equation for induced emf is :

(A) $Eg = \frac{\phi ZN}{60} \times \frac{P}{Z}$ (B) $Eg = \frac{\phi ZN}{60} \times \frac{P}{A}$

(C) $\frac{\phi AN}{60} \times \frac{P}{Z}$ (D) $\frac{\phi AP}{60} \times \frac{Z}{N}$

14. The equation for armature current in a DC motor is :

(A) $Ia = \frac{V}{Ra}$ (B) $Ia = \frac{Eb}{Ra}$

(C) $Ia = \frac{V - Eb}{Ra}$ (D) $Ia = \frac{V + Eb}{Ra}$

15. Armature torque of a DC motor in N.M. is :

(A) $E_b I_a$ (B) $\frac{E_b I_a}{2\pi N}$

(C) $\frac{60 E_b I_a}{2\pi N}$ (D) $\frac{2\pi N}{E_b I_a}$

16. A 3 point starter is used to :

(A) control the speed
(B) control the load
(C) limit the current
(D) decrease the efficiency

17. An AC Generator is equiped with :

(A) commutator
(B) split ring
(C) end rings
(D) slip rings

18. The speed of a rotating field is known as :

(A) slip speed
(B) field speed
(C) synchronous speed
(D) actual speed

19. An induction motor works on the basis of :

(A) Fleming's rule
(B) Thump rule
(C) Ohms law
(D) Lenz's law

20. A single phase induction motor has :

(A) one stator winding
(B) two stator winding
(C) three stator winding
(D) no stator winding

21. The ratio of ampere hour efficiency to Watt hour efficiency of a lead acid cell is :

(A) less than one
(B) one
(C) greater than one
(D) zero

22. A constant voltage charging system :

(A) increases charging time
(B) reduces charging time
(C) same as constant current system
(D) it may increase or decrease

23. A kWh meter is classified as :

(A) indicating instrument
(B) recording instrument
(C) integrating instrument
(D) measuring instrument

24. The torque of an ammeter varies as the square of the current through it. If a current of 5A produces a deflection of 90°, what deflection will occur for a current of 3A, when the instrument is spring controlled :

(A) 16.2°
(B) 32.4°
(C) 44.4°
(D) 66.2°

25. Multipliers are used for :

(A) range extension of ammeters
(B) range extension of volt meters
(C) range extension of watt meters
(D) range extension of energy meters

26. An energy meter has:

(A) no deflecting torque
(B) no controlling torque
(C) no damping torque
(D) no rotatory torque

27. The current coil of a watt meter is made of with :

(A) low resistance wires
(B) high resistance wires
(C) medium resistance wire
(D) insulators

28. The secondary of a current transformer is always open circuited because of :

(A) high current in secondary
(B) high voltage in secondary
(C) high power in secondary
(D) high energy in secondary

29. Dielectric heating uses :

(A) high voltage
(B) high current
(C) high frequency
(D) high energy

30. Arc Furnaces differ from induction furnacy by:

(A) Current in the furnance terminals passes through the charged material
(B) Current is induced in the charged material
(C) Eddy current causes heating in arc furnaces
(D) High frequency voltage causes the heating

31. Which one is most suitable for back gear mechanism in a lathe?

(A) Compound gear train
(B) Reverted gear train
(C) Epicyclic gear train
(D) Constant mesh gear train

32. Clapper box in a shaper is used to :

(A) Hold the cutting tool rigidly
(B) Protect the table and vice from overload
(C) Free movement of cutting tool in return stroke
(D) Adjust the length of stroke

33. In a two stroke diesel engine, one cycle is completed in :

(A) 180° of crank rotation
(B) 540° of crank rotation
(C) 360° of crank rotation
(D) 720° of crank rotation

34. Two isentropic and two constant volume process comprises in :

(A) Dual cycle (B) Carnot cycle

(C) Diesel cycle (D) Otto cycle

35. A forging operation in which the diameter increases with the expense of length is known as :

(A) Jumping (B) Drawing

(C) Fullering (D) Piercing

36. A system in which no mass and energy crosses the boundary :

(A) Open System (B) Closed System

(C) Isolated System (D) None of the above

37. Taps are used to :

(A) Make internal threads (B) Make external threads

(C) Enlarge drilled holes (D) Squaring the round holes

38. From the given statements choose the correct one :

(A) Cross peen hammer head is used to spread metal at right angles to the line of striking

(B) Cutting edge angle of cold chisel is greater than the cutting angle of hot chisel

(C) Punches are used to expand the holes in forging operation

(D) Drift is used for cutting hot metals

39. In which annealing process the metal is heated below lower critical temperature?

(A) Full Annealing (B) Process Annealing

(C) Spheroids Annealing (D) Isothermal Annealing

40. Which method is most suitable for making steep tapers?

(A) Compound rest method (B) Tail stock offset method

(C) Taper turning attachment method (D) Form tool method

41. A vernier calliper having one main scale division is 0.5mm and 49 divisions of the main scale is divided into 50 divisions in vernier scale. What is the least count of the instrument?

(A) 0.02 mm (B) 0.01 mm

(C) 0.5 mm (D) 0.05 mm

42. The snap gauge is used to :

(A) Measure the length of rod (B) Check the internal dimensions

(C) Check the external dimensions (D) Measure the internal threads

43. Which instrument is used to check the gaps between two mating parts?

(A) Plug gauge
(B) Feeler gauge
(C) Dial gauge
(D) Slip gauge

44. The shape of hardie hole in an anvil is :

(A) Square
(B) Circular
(C) Hexagonal
(D) Triangular

45. Scarfing is the process for :

(A) Forming the metal to fit in pritchel hole
(B) Coating flux around the metal before forge welding
(C) Preparing the metal for forge welding
(D) Clearing the scales in forging operation

46. An example for pressure welding :

(A) Resistance welding
(B) Gas welding
(C) Metal arc welding
(D) Tig welding

47. In a two stroke petrol engine which processes are done when the piston moves from TDC to BDC?

(A) Suction and exhaust
(B) Compression and exhaust
(C) Compression, power and exhaust
(D) Suction, power and exhaust

48. Steels with 0.8% carbon is called :

(A) Eutectic steel
(B) Hypo eutectoid steel
(C) Hyper eutectoid steel
(D) Eutectoid steel

49. A taper given to all vertical surface of a pattern is known as :

(A) Rapping allowance
(B) Distortion allowance
(C) Draft allowance
(D) Shrinkage allowance

50. The function of surge tank is :

(A) To regulate the flow on penstock
(B) To eliminate water hammering
(C) To act as a reservoir when overflow occurs
(D) To maintain the water head in the reservoir

51. Natural moulding sand contains :

(A) 5-20% clay
(B) 25-40% clay
(C) 52-70% clay
(D) less than 5% clay

52. Which instrument is most suitable to take the length of blind hole?

(A) Vernier Calliper
(B) Inside micro meter
(C) Vernier depth gauge
(D) Vernier height gauge

53. Continuous chips with built-up edge is formed when :

(A) High cutting speed with greater rake angle
(B) Low coefficient of friction
(C) Smaller rake angle with lower cutting speed
(D) Low cutting pressure and temperature

54. Force acting perpendicular to the axis of the work piece during metal cutting is :

(A) Radial force
(B) Feed force
(C) Cutting force
(D) Resultant force

55. Which law states that in a perfect gas the volume varies directly proportional to the absolute temperature when the pressure is constant?

(A) Avogadro's Law
(B) Boyel's Law
(C) Gay Lucas's Law
(D) Charles Law

56. Which one is an extensive property?

(A) Volume
(B) Temperature
(C) Density
(D) Pressure

57. Conventional method of gear manufacturing is :

(A) Broaching
(B) Hobbing
(C) Honing
(D) Milling

58. The main function of lead screw in a lathe is :

(A) Support the work piece
(B) To give correct longitudinal feed to the tool
(C) To support the carriage
(D) To lock the carriage while thread cutting

59. The unit of strain :

(A) N/mm^2
(B) Nm
(C) Nms
(D) Unit less

60. In a reciprocating pump the function of air vessel is :

(A) To get more discharge
(B) To maintain continuous flow
(C) To avoid priming
(D) To obtain high head

61. Zener diode is always connected in :

(A) Forward bias
(B) Reverse bias
(C) Any of above
(D) None

62. Cut in voltage in Germanium is :

(A) 0.2 V
(B) 0.7 V
(C) 1 V
(D) 0.02 V

63. For high frequency application which transistor configuration is preferred :

(A) CE
(B) CB
(C) CC
(D) None

64. α - cut off frequency of a Bipolar Junction transistor :

(A) increases with increase in basewidth
(B) increases with increase in temperature
(C) increases with increase in collector width
(D) increases with decrease in basewidth

65. The bandwidth of a n-stage tuned amplifier with each stage having a bandwidth of B is given by :

(A) B/n
(B) $B/\sqrt{n}$
(C) $B\sqrt{2^{\frac{1}{n}}-1}$
(D) $\frac{B}{\sqrt{2^{\frac{1}{n}}-1}}$

66. The voltage series feedback results in :

(A) increase in both input and output impedances
(B) decrease in both input and output impedances
(C) increase in input impedance and decrease in output impedance
(D) decrease in input impedance and increase in output impedance

67. One of the following device does not have thermal run away problem :

(A) BJT
(B) P-N Junction diode
(C) FET
(D) None