1. A dc series motor should not be started :
   (1) At no load   (2) At full load
   (3) With normal load
   (4) With a small load

2. The air gap between stator and armature of an electric motor is kept as small as possible
   (1) To get a stronger magnetic field
   (2) To improve the air circulation
   (3) To reach a higher speed of rotation
   (4) To make the rotation easier

3. A polythene piece rubbed with wool is found to have a negative charge of 3.2×17^{-7} coulomb. Estimate the number of electrons transferred.
   (1) 2×10^{11} (2) 2×10^{12}
   (3) 3×10^{11} (4) 3×10^{12}

4. Coulomb's law is given by $F = Kq_1q_2r^n$ where n is :
   (1) $\dfrac{1}{2}$ (2) -2
   (3) 2 (4) $-\dfrac{1}{2}$

5. If a positive charge is shifted from a low potential region to high potential region, the electric potential energy :
   (1) Decreases   (2) Increases
   (3) Remains the same
   (4) May increase/decrease

6. When a dielectric slab is introduced between the plates of a capacitor connected to a battery.
   (1) Charge on capacitor increases
   (2) Potential difference across the capacitor increases
   (3) capacity remains same
   (4) None of these

7. The value of the current in the circuit shown in the following figure is :
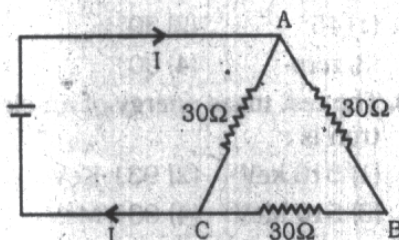

8. Specific resistance of copper, silver and constantan are $1.78 \times 10^{-6}\ \Omega$ cm, $10^{-6}\ \Omega$ cm and $48 \times 10^{-6}\ \Omega$ cm respectively. Which is the best conductor ?
   (1) Copper
   (2) Silver
   (3) Constantan
   (4) Copper and Silver

9. A piece of copper and another of germanium are cooled from room temperature to 40°K. The resistance of :
   (1) Each of them decreases
   (2) Each of them increases
   (3) Copper increases, germanium decreases
   (4) Copper decreases, germanium increases

10. How much current is drawn by a motor of 0.5 HP from 220 volt supply ?
    (1) 1.2 A   (2) 1.4 A
    (3) 1.7 A   (4) None of these

11. The commercial unit of electric energy is a kilowatt-hour (kwh). 1 kwh is equal to :
    (1) 3.6×10^3 J   (2) 3.6×10^6 J
    (3) 3.4×10^3 J   (4) 3.5×10^6 J

12. In an electric iron the wire of nichrome is used because :
    (1) It has high melting point and high value of specific resistance
    (2) It can be easily drawn into wires
    (3) It is not oxidised easily when heated in air
    (4) All of the above

13. A current in a circuit having constant resistance is tripled. How does this affect the power dissipation ?
    (1) It becomes 8 times
    (2) It becomes 5 times
    (3) It becomes 10 times
    (4) It becomes 9 times

    (1) 1 A   (2) 0.01 A
    (3) 0.02 A   (4) 0.1 A

14. Special silicon steel is used laminations in power transfo to reduce :
    (1) Eddy current losses
    (2) Hysteresis losses
    (3) Copper losses
    (4) Both (1) and (2)

15. An inductor may store ener
    (1) Its electric field
    (2) Its coils
    (3) Its magnetic field
    (4) Both in magnetic and el fields

16. The working of a dynamo is on the principle of :
    (1) Heating effect of curren
    (2) Magnetic effect of curre
    (3) Chemical effect of curre
    (4) Electromagnetic inductio

17. In an a.c. circuit the curre
    (1) Is in phase with the vol
    (2) leads the voltage
    (3) Lags the voltage
    (4) Any of the above

18. Which of the following qua remains constant in a step transformer ?
    (1) Current
    (2) Voltage
    (3) Power
    (4) None of these

19. Super high frequency electr netic waves are used in Their frequency range is
    (1) 3000 to 30000 MHz
    (2) 2000 to 20000 MHz
    (3) 30000 to 60000 MHz
    (4) None of these

20. When an impurity is dopp an intrinsic semiconducto conductivity of the semico tor :
    (1) Decreases
    (2) Becomes zero
    (3) Remains same
    (4) Increases

21. In the following figure, the is across the terminals A and the output is across D. Then the output is :

(1) Half wave rectified
(2) Full wave rectified
(3) Zero
(4) Same as the input

22. Resistivity of semiconductor depends on :
(1) Shape of semiconductor
(2) Length of semiconductor
(3) Atomic nature of semiconductor
(4) None of these

23. A bird sitting on a high power line :
(1) Gets killed instantly
(2) Gets a mild shock
(3) Is not affected practically
(4) Gets a fatal shock

24. In the circuit shown below each capacitor has a capacity of $3\mu F$. Calculate the quantity of charge on each capacitor.
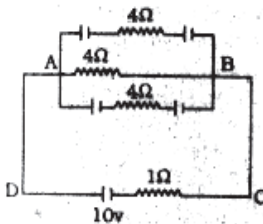
(1) $12\mu C$
(2) $11\mu C$
(3) $10\mu C$
(4) None of these

25. When an electric train moves down a hill, the dc motor acts as
(1) dc series generator
(2) dc shunt generator
(3) dc shunt motor
(4) None of these

26. The dimensional formula ML^2T^{-2} represents
(1) Moment of force
(2) Force
(3) Acceleration
(4) Momentum

27. An airtight cage with a parrot sitting in it is suspended from the spring balance. The parrot starts flying. The reading of the spring balance will

(1) Increase
(2) Decrease
(3) Not change
(4) Be zero

28. Light year is the unit of
(1) Time
(2) Intensity of light
(3) Distance
(4) None of these

29. Two bodies are moving in opposite direction with speed V. What is the magnitude of their relative velocity ?
(1) O
(2) V
(3) V/2
(4) 2V

30. A man in a lift weights more, when the lift
(1) Begins to go up
(2) Is going up steadily
(3) Is slowing down
(4) Is descending freely

31. Rocket works on the principle of conservation of :
(1) Mass
(2) Energy
(3) Linear momentum
(4) Angular momentum

32. To impart yellow colour to glass which of the following substances is mixed ?
(1) Cobalt oxide
(2) Cadmium sulphide
(3) Manganese oxide
(4) None of these

33. Sodium reacts vigorously with cold water to give
(1) $NaOH$
(2) Na_2O
(3) H_2O
(4) None of these

34. Which of the following metals is the most abundant in the earth's crust ?
(1) Aluminium
(2) Iron
(3) Calcium
(4) Potassium

35. Avogadro number is the number of molecules in :
(1) One litre of a gas at N.T.P.
(2) One mole of a gas
(3) One gram of a gas
(4) One kilogram of a gas

36. Rice takes longest to cook
(1) In submarine 100 m below the surface of the sea
(2) At the sea level
(3) At Simla
(4) At Mount Everest

37. Cloudy nights are usually warmer than clear ones, because clouds :
(1) Do not radiate heat

(2) Do not absorb heat
(3) Have low thermal conductivity
(4) None of these

38. Decibel is the unit of :
(1) Light intensity
(2) Sound intensity
(3) Heat intensity
(4) None of these

39. The factor that helps to recognise a person by his voice is :
(1) Loudness
(2) Pitch
(3) Intensity
(4) Quality

40. Which is the oldest breeding method ?
(1) Hybridization
(2) Selection
(3) Mutation
(4) Introduction

41. Plant and animals living in an area form
(1) Community
(2) Plankton
(3) Population
(4) Ecosystem

42. If the plants of the world die, all the animals will also die due to shortage of :
(1) Cold
(2) Food
(3) Oxygen
(4) Timber

43. The chemical formula of Haematite is
(1) Fe_3O_4
(2) Fe_2O_3
(3) $FeCO_3$
(4) None of these

44. Ethanol burns readily in air to form
(1) Carbon dioxide
(2) Oxygen
(3) Nitrogen
(4) None of these

45. The chemical formula of baking soda is :
(1) Na_2CO_3
(2) $NaHCO_3$
(3) $NaCl$
(4) Na_2O

46. The term GPRS stands for :
(1) General Packet Radar Service
(2) General Post Radar Service
(3) General Packet Radio Service
(4) None of these

47. At magnetic poles, the angle of dip is :
(1) 45°
(2) 30°
(3) zero
(4) 90°

48. The rest mass energy of an electron is :
(1) 510 keV
(2) 931 KeV
(3) 510 MeV
(4) 931 MeV

2

49. Which of planet is brighest ?
(1) Mercury   (2) Venus
(3) Marsh   (4) Jupiter

50. Cathode rays were discovered by :
(1) J.J. Thomson
(2) Goldstein
(3) Chadwick
(4) Faraday

51. The sum of two numbers is 1215 and their HCF is 81. How many such pairs of numbers can be formed ?
(1) 2   (2) 3
(3) 4   (4) 5

52. The HCF of $\dfrac{3}{7}$, $\dfrac{5}{14}$ and $\dfrac{17}{28}$ is :

(1) $\dfrac{1}{14}$ (2) $\dfrac{1}{7}$

(3) $\dfrac{3}{14}$ (4) $\dfrac{1}{28}$

53. The least perfect square number which is divisible by 10, 12, 15 and 18 is :
(1) 1600   (2) 900
(3) 2500   (4) 3600

54. The average weight of 29 students is 40 kg. If the weight of the teacher be included the average weight is increased by 300 gms. The weight of the teacher is :
(1) 49 kg   (2) 49.5 kg
(3) 55 kg   (4) 48.5 kg

55. A positive number when decreased by 4 is equal to 21 times the reciprocal of the number, then the number is :
(1) 5   (2) 7
(3) 9   (4) 8

56. Annual incomes of A and B is in the ratio 5 : 3 and their annual expenses bear a ratio 3 : 1. If each of them saves Rs. 600 at the end of the year, the annual income of A is :
(1) Rs. 1200   (2) Rs. 1400
(3) Rs. 1500   (4) Rs. 1600

57. 95 men had provisions for 200 days. After 5 days 30 men died due to an epidemic. The remaining food will last for how many days ?
(1) 200   (2) 180
(3) 285   (4) None of these

58. A, B and C enter into a partnership with a certain capital in which A's contribution is Rs. 10000. If out of total profit of Rs. 1000, A gets Rs. 500, B gets Rs. 300 then C's capital is :
(1) Rs. 4000   (2) Rs. 3600
(3) Rs. 4400   (4) Rs. 4800

59. A mixture contains alcohol and water in the ratio 4 : 3. If 5 litres of water is added to the mixture, the ratio becomes 4 : 5. The quantity of alcohol in the given mixture is :
(1) 10 litres   (2) 12 litres
(3) 11 litres   (4) 15 litres

60. A number exceeds 20% of it-self by 40. The number is :
(1) 50   (2) 60
(3) 320   (4) 80

61. Ram is 4 times as old as his son. Four years hence, the sum of their ages will be 43 years. The present age of the son is :
(1) 3 years   (2) 5 years
(3) 6 years   (4) 7 years

62. The ages of two person, differ by 20 years. If 5 years ago, the elder one be 5 times as old as the younger one their present ages (in years) are respectively.
(1) 30,10   (2) 20,10
(3) 35,15   (4) 51,17

63. $0.\overline{8} + 0.\overline{4} + 0.\overline{5} + 0.\overline{7}$ is equal to :

(1) $1\dfrac{1}{3}$ (2) $2\dfrac{2}{3}$

(3) $2\dfrac{2}{7}$ (4) $2.\overline{4}$

64. If $\sqrt{0.03 \times 0.3 \times a} = 0.3 \times 0.03 \times \sqrt{b}$ then the value of $\dfrac{a}{b}$ is :
(1) 0.9   (2) 0.09
(3) 0.009   (4) 0.0009

65. The sum of $\overline{2.75} + \overline{3.78}$ is :
(1) $\overline{5}.53$ (2) $\overline{4}.53$
(3) $\overline{1}.53$ (4) $\overline{1}.43$

66. The value of

$$\left[2^{\frac{3}{4}} + 2^{\frac{1}{2}} + 2^{\frac{1}{4}} + 1\right]\left[2^{\frac{1}{4}} - 1\right]$$ is equal to :

(1) 1   (2) -1
(3) 2   (4) -2

67. $2 + \dfrac{2}{\sqrt{2}} + \dfrac{1}{2 + \sqrt{2}}$ equal to :
(1) 4   (2)
(3) 3   (4) 1

68. The value of $\dfrac{\sqrt{0.36}}{\sqrt{0.225}}$ is :
(1) 1.4   (2) 1.3
(3) 1.267   (4) 1.376

69. The sum of

$\sqrt{0.0001} + \sqrt{0.0081} + \sqrt{00} + \sqrt{0.000009}$ is :
(1) 0.359   (2) 0.534
(3) 0.543   (4) 0.353

70. Naresh secured ...% in Hindi, 60% in English and ... in Maths as well as in ... What were his total marks ... maximum marks obtain... each of these 4 subjects ...
(1) 120   (2) 125
(3) 150   (4) 200

71. The perimeter of a square ... cm. The length of the rect... which is 10 cm wide and is ... equal to that of the square...

(1) $14\dfrac{1}{3}$ cm   (2) $18\dfrac{2}{5}$

(3) $12\dfrac{3}{4}$ cm   (4) $10\dfrac{5}{8}$

72. If a man can walk to a pla... $4\dfrac{3}{4}$ hours walking at 3... hour, how long would it ta... other man walking at $3\dfrac{1}{6}$ ... hour to walk there and back...

(1) $10\dfrac{1}{3}$ hrs   (2) $9\dfrac{1}{4}$ hrs

(3) $9\dfrac{3}{4}$ hrs   (4) $10\dfrac{2}{3}$ hrs

73. In a train accident 10% of the ...sengers died on the spot, ... of the rest, later in the ... If the number of ... 1710, how many passeng... originally there ?
(1) 2000   (2) 1980
(3) 2040   (4) 1800