MERITSTORE

NEET-PHYSICS

1. Given, potential difference $V=(8 \pm 0.5)$ volt and current $I = (2 \pm 0.2)$A. The value of resistance R is

   a) $4 \pm 16.25\%$ b) $4 \pm 6.25\%$

   c) $4 \pm 10\%$ d) $4 \pm 8\%$

2. The dimensions of emf in MKS is

   a) $ML^{-1}T^{-2}Q^{-2}$ b) $ML^{2}T^{-2}Q^{-2}$

   c) $MLT^{-2}Q^{-1}$ d) $ML^{2}T^{-2}Q^{-1}$

3. A particle moving along a straight line has a velocity v ms^{-1}, when it cleared a distance of y metre. These two are connected by the relation $v = \sqrt{49 + y}$. When its velocity is 1ms^{-1}, its acceleration (in ms^{-2})is

   a) 1 b) 2 c) 7 d) 0.5

4. A fighter plane enters inside the enemy territory, at time $t = 0$ with velocity $v_0 = 250$ ms^{-1} and moves horizontally with constant acceleration $a = 20\text{ms}^{-2}$ (see figure). An enemy tank at the border, spot the plane and fire shots at an angle $\theta = 60°$ with the horizontal and with velocity $u = 600$ ms^{-1}. At what altitude H of the plane it can be hit by the shot?

   a) $1500\sqrt{3}$m
   b) 125 m
   c) 1400 m
   d) 2473 m

5. A particle moves in a circle of radius 30cm. Its liner speed is given by $v = 2t$, where t is in second and $v$in ms^{-1}. Find out its, radial and tangential acceleration at $t = 3$s, respectively,

   a) $220\ \text{ms}^{-2}, 50\ \text{ms}^{-2}$ b) $100\ \text{ms}^{-2}, 5\ \text{ms}^{-2}$ c) $120\ \text{ms}^{-2}, 2\ \text{ms}^{-2}$ d) $110\ \text{ms}^{-2}, 10\ \text{ms}^{-2}$

6. Two bodies of masses m_1 and m_2 are connected by a light, inextensible string which passes over a frictionless pulley. If the pulley is moving upward with uniform acceleration g, then the tension in the string is

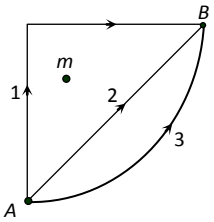
   a) $\frac{4m_1m_2}{m_1+m_2}\text{g}$ b) $\frac{m_1m_2}{4m_1m_2}\text{g}$

   c) $\frac{m_1m_2}{m_1+m_2}\text{g}$ d) $\frac{m_1-m_2}{m_1+m_2}\text{g}^2$

7. A stone weighing 1 kg and sliding on ice with a velocity of 2 m/s is stopped by friction in 10 sec.The force of friction (assuming it to be constant) will be

a) $-20\ N$ b) $-0.2\ N$ c) $0.2\ N$ d) $20\ N$

8. If W_1, W_2 and W_3 represent the work done in moving a particle from A to B along three different paths 1, 2 and 3 respectively (as shown) in the gravitational field of a point mass m, find the correct relation between W_1, W_2 and W_3



a) $W_1 > W_2 > W_3$ b) $W_1 = W_2 = W_3$
c) $W_1 < W_2 < W_3$ d) $W_2 > W_1 > W_3$

9. An automobile engine develops 100 kW when rotating at a speed of 1800 rev/min. What torque does it deliver

a) 350 N-m b) 440 N-m c) 531 N-m d) 628 N-m

10. A body is rolling down an inclined plane. If K.E. of rotation is 40% of K.E. in translatory state, then the body is a

a) Ring b) Cylinder
c) Hollow ball d) Solid ball

11. Venus looks brighter than other planets because

a) It is heavier than other planets
b) It has higher density than other planets
c) It is closer to the earth than other planets
d) It has no atmosphere

12. The ratio of two specific heats of gas C_p/C_v for argon is 1.6 and for hydrogen is 1.4. Adiabatic elasticity of argon at pressure $P$is E. Adiabatic elasticity of hydrogen will also be equal to E at the pressure

a) P b) $\frac{8}{7}P$ c) $\frac{7}{8}P$ d) $1.4P$

13. According to Bernoulli's equation

$\frac{P}{\rho g} + h + \frac{1}{2}\frac{v^2}{g} = \text{constant}$

The terms A, B and C are generally called respectively

a) Gravitational head, pressure head and velocity head
b) Gravity, gravitational head and velocity head
c) Pressure head, gravitational head and velocity head
d) Gravity, pressure and velocity head

14. To what height should a cylindrical vessel be filled with a homogeneous liquid to make the force with which the liquid presses on the sides of the vessel equal to the force exerted by the liquid on the bottom of the vessel. If should be

a) Equal to the radius b) Less than radius
c) More than radius d) Four times of radius

15. When two ends of a rod wrapped with cotton are maintained at different temperatures and after same time every point of the rod attains a constant temperature, then

a) Conduction of heat at different points of the rod stops because the temperature is not increasing
b) Rod is bad conductor of heat
c) Heat is being radiated from each point of the rod
d) Each point of the rod is giving heat to its neighbour at the same rate at which it is receiving heat

16. An ideal gas expands in such a manner that its pressure and volume can be related by equation $PV^2 =$ constant. During this process, the gas is
a) Heated
b) Cooled
c) Neither heated nor cooled
d) First heated and then cooled

17. When heat is given to a gas in an isothermal change, the result will be
a) External work done
b) Rise in temperature
c) Increase in internal energy
d) External work done and also rise in temp.

18. One mole of monoatomic gas and three moles of diatomic gas are put together in a container. The molar specific heat (in J K^{-1} mol^{-1}) at constant volume is ($R = 8.3$ J K^{-1} mol^{-1})
a) 18.7 b) 18.9
c) 19.2 d) None of these

19. The total energy of a simple harmonic oscillator is proportional to
a) Square root of displacement
b) Velocity
c) Frequency
d) Square of the amplitude

20. A simple pendulum is suspended from the ceiling of a lift. When the lift is at rest its time period is T. With what acceleration should the lift be accelerated upwards in order to reduce its period to $T/2$? (g is acceleration due to gravity)
a) 2 g b) 3 g c) 4 g d) g

21. An open organ pipe of length / vibrates in its fundamental mode. The pressure vibration is maximum
a) At the two ends
b) At the distance 1/2 inside the ends
c) At the distance 1/4 inside the ends
d) At the distance 1/8 inside the ends

22. A capacitor is charged by a battery and the energy stored is U. The battery is now removed and the separation distance between the plates is doubled. The energy stored now is

a) $\frac{U}{2}$ b) U c) $2U$ d) $4U$

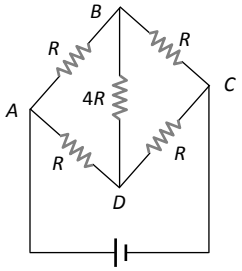
23. The charge on two identical metallic balls are $+40\mu$ and -10μC respectively and they are separated at 2.0 m. How much and nature of force will act between them?
a) 2.9 N, repulsive b) 1.9 N, attractive
c) 1.2 N, repulsive d) 0.9 N, attractive

24. n Small drops of same size are charged to V volt each. If they coalesce to form a single large drop, then its potential will be
a) Vn b) Vn^{-1} c) $Vn^{1/3}$ d) $Vn^{2/3}$

25. If in the circuit, power dissipation is 150 W, then R is

a) 2 Ω b) 6 Ω c) 5 Ω d) 4 Ω

26. Five resistors of given values are connected together as shown in the figure. The current in the arm BD will be



a) Half the current in the arm ABC
b) Zero
c) Twice the current in the arm ABC
d) Four times the current in the arm ABC

27. How many coulombs of electric charge must pass through acidulated water in order to release 22.4 L Of hydrogen at NTP?
a) 96500 Faraday b) 193000 coulomb
c) 196500 Faraday d) 96500 coulomb

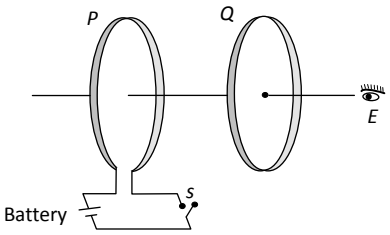
28. A rectangular coil 20 $cm \times 20$ cm has 100 turns and carries a current of 1 A. It is placed in a uniform magnetic field $B = 0.5$ T with the direction of magnetic field parallel to the plane of the coil. The magnitude of the torque required to hold this coil in this position is
a) Zero b) 200 N-m c) 2 N-m d) 10 N-m

29. The relation between B, H and I in SI unit is
a) $B = \mu_0(H + I)$ b) $B = H + 4\mu I$
c) $H = \mu_0(B + I)$ d) None of these

30. When a ferromagnetic material is heated to temperature above its curie point, the material
a) Is permanently magnetized

b) Remains ferromagnetic
c) Behaves like a diamagnetic material
d) Behaves like a paramagnetic material

31. As shown in the figure, P and Q are two coaxial conducting loops separated by some distance. When the switch S is closed, a clockwise current I_P flows in P (as seen by E) and an induced current I_{Q_1} flows in Q. The switch remains closed for a long time. When S is opened, a current I_{Q_2} flows in Q. Then the directions of I_{Q_1} and I_{Q_2} (as seen by E) are



a) Respectively clockwise and anticlockwise
b) Both clockwise
c) Both anticlockwise
d) Respectively anticlockwise and clockwise

32. A uniformly wound solenoidal coil of self inductance 1.8×10^{-4} H and resistance 6 Ω is broken up into two identical coils. These identical coils are then connected in parallel across a 12 V battery of negligible resistance. The time constant of the current in the circuit and the steady state current through battery is

a) 3×10^{-5} s, 8 A
b) 1.5×10^{-5} s, 8 A
c) 0.75×10^{-4} s, 4 A
d) 6×10^{-5} s, 2 A

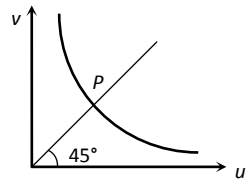
33. A resistor and a capacitor are connected in series with an AC source. If the potential drop across the capacitor is 5 V and that across resistor is 12 V, then applied voltage is

a) 13 V b) 17 V c) 5 V d) 12 V

34. The temperature variation in the region of stratosphere lies from

a) 290 K to 220 K b) 220 K to 280 K
c) 220 K to 380 K d) 180 K to 700 K

35. The graph shows variation of v with change in u for a mirror. Points plotted above the point P on the curve are for values of v



a) Smaller then f b) Smaller then $2f$
c) Larger then $2f$ d) Larger then f

36. An achromatic prism is made by crown glass prism ($A_c = 19°$) and flint glass prism ($A_F = 6°$). If ${}^{C}\mu_v = 1.5$ and ${}^{F}\mu_v = 1.66$, then resultant deviation for red coloured ray

will be

a) $1.04°$ b) $5°$ c) $0.96°$ d) $13.5°$

37. In a given direction, the intensities of the scattered light by a scattering substance for two beams of light are in the ratio of 256 : 81. The ratio of the frequency of the first beam to the frequency of the second beam is

a) $64 : 127$ b) $1 : 2$

c) $64 : 27$ d) None of these

38. A radio transmitter operates at a frequency of 880 kHz and a power of 10 kW. The number of photons emitted per second are

a) 1.72×10^{31} b) 1327×10^{34}

c) 13.27×10^{34} d) 0.075×10^{-34}

39. If f_1, f_2 and f_3 are the frequencies of corresponding K_α, K_β and $L_\alpha X$-rays of an element, then

a) $f_1 = f_2 = f_3$ b) $f_1 - f_2 = f_3$

c) $f_2 = f_1 + f_3$ d) $f_2^2 = f_1 f_3$

40. What is the radius of Iodine atom? (Atomic no.53, mass no.126)

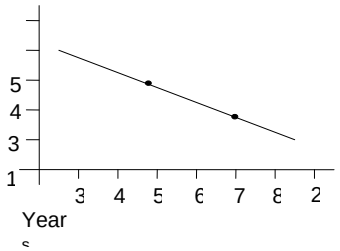
a) 2.5×10^{-11}m b) 2.5×10^{-9}m

c) 7×10^{-9}m d) 7×10^{-11}m

41. A gamma ray photon creates an electron-positron pair. If the rest mass energy of an electron is 0.5 MeV and the total K.E. of the electron-positron pair is 0.78 MeV, then the energy of the gamma ray photon must be

a) 0.78 MeV b) 1.78 MeV c) 1.28 MeV d) 0.28 MeV

42. To determine the half- life of radioactive element, a student plots graph of $\ln\left|\frac{dN\ (t)}{dt}\right| versus\ t$. Here $\frac{dN\ (t)}{dt}$ is the rate of radioactive decay at time t. If the number of radioactive nuclei of this element decreases by a factor of p after 4.16 yr, the value of p is



a) 8 b) 7 c) 4 d) 8.5

43. The laptop PC's modern electronic watches and calculators use the following for display

a) Single crystal b) Poly crystal

c) Liquid crystal d) Semiconductors

44. Mean optical power launched into an 8 km fibre is 120 μW and mean output power is 4 μW, then the overall attenuation is (Given $\log 30 = 1.477$)

a) 14.77 dB b) 16.77 dB

c) 3.01 dB d) None of these

45. Basically, a communication system is a

a) Transmitter b) Receiver

c) Messenger

d) None of these