

# KNOWLEDGE HORIZON CLASSES

## Test Series

- Q1.** Find *incorrect* alternative. The SI unit of electric field intensity is:  
(i)  $\text{Am}^{-1}$  (ii)  $\text{Vm}^{-1}$   
(iii)  $\text{JC}^{-1}\text{m}^{-1}$  (iv)  $\text{NC}^{-1}$
- Q2.** A hollow insulated conduction sphere is given a positive charge of  $10 \mu\text{C}$ . What will be the electric field at the centre of the sphere of its radius 2 metres?  
(i) Zero (ii)  $5 \mu\text{C m}^{-2}$   
(iii)  $20 \mu\text{C m}^{-2}$  (iv)  $8 \mu\text{C m}^{-2}$
- Q3.** When a test charge is brought from infinity along the perpendicular bisector of an electric dipole, then the work done is:  
(i) positive (ii) negative  
(iii) zero (iv) can not be explained
- Q4.** A  $4\mu\text{F}$  capacitors is charged to 400 V. Its plates are connected by a copper wire. The heat produced in the wire is:  
(i) 0.16J (ii) 0.32J  
(iii) 0.64J (iv) 1.28 J
- Q5.** In a 210-W electric bulb, the heat generated in 5 minutes will be approximately (J = 4.2 joule/calorie)  
(i) 15000 cal (ii) 1050 cal (iii) 63000 cal (iv) 80000 cal
- Q6.** n rows each having m cells in series, are connected in parallel. This battery of cells is sending maximum current in a 3-ohm resistor. If the internal resistance of each cell is 0.5 ohm, then:  
(i)  $m = 12, n = 2$  (ii)  $m = 8, n = 3$  (iii)  $m = 2, n = 12$  (iv)  $m = 6, n = 4$
- Q7.** Which of the following particles will experience largest force when projected perpendicular to a magnetic field with same velocity:  
(i) electron (ii) proton (iii)  $\text{He}^+$  (iv)  $\text{Li}^{++}$

- Q8.** Two long, parallel wires, separated by a distance  $r$ , have an equal current  $I$  flowing through them. The magnetic field of one exerts a force  $F$  on the other. The distance  $r$  is increased to  $2r$  and the current in each wire is reduced from  $I$  to  $I/2$ . What is the force between them now?
- (i)  $F$  (ii)  $4F$   
(iii)  $\frac{F}{4}$  (iv)  $\frac{F}{8}$
- Q9.** A magnet makes 5 oscillations per minute in  $H = 0.3 \times 10^{-4} T$ . By what amount the field should be increased so that the number of oscillations is 10 in the same time?
- (i)  $0.3 \times 10^{-4} T$  (ii)  $0.6 \times 10^{-4} T$   
(iii)  $0.9 \times 10^{-4} T$  (iv)  $1.2 \times 10^{-4} T$
- Q10.** Why does a spark occur in a switch when the power line is put off?
- (i) Due to short circuit.  
(ii) Due to overloading.  
(iii) Due to induced emf.  
(iv) All the above.
- Q11.** The maximum current through a pure capacitor of capacitance  $C$  is  $I_0$ . The maximum emf is  $E_0$ . If the frequency is 50 Hz, the average power dissipated through the capacitor is
- (i)  $E_0 I_0 / 2$  (ii) Zero (iii)  $E_0 I_0$  (iv)  $I^2 / 100 \pi$
- Q12.** Electromagnetic wave is produced by
- (i) Static charge  
(ii) Moving charge  
(iii) Accelerated charge  
(iv) In all above cases
- Q13.** An object is placed at 20 cm in front of a concave mirror of radius of curvature 15 cm. What is the position of image?
- (i) -12 cm (ii) 40 cm (iii) -60 cm (iv) 60 cm
- Q14.** In rainbow there is,
- (i) refraction of light (ii) total internal reflection  
(iii) dispersion (iv) all of the above
- Q15.** The wave phenomena associated with holography is
- (i) Diffraction (ii) interference  
(iii) polarisation (iv) refraction
- Q16.** Diffraction proves

- (i) Wave nature of light                      (ii) Particle nature of light  
(iii) Both of the above                      (iv) none of the above
- Q17.** An X-ray tube produces a continuous spectrum of radiation with its short wavelength end at  $0.45 \text{ \AA}$ . What is the maximum energy of a photon in the radiation?  
(i)  $4.42 \times 10^{-13} \text{ J}$                       (ii)  $4.42 \times 10^{-15} \text{ J}$   
(iii)  $4.42 \times 10^{-19} \text{ J}$                       (iv) none of these
- Q18.** With increasing quantum number, the energy difference between adjacent energy levels in atoms  
(i) decreases  
(ii) increases  
(iii) remains constant  
(iv) decreases for low  $z$  and increases for high  $z$ .
- Q19.** Radioactivity is  
(i) irreversible process                      (ii) self disintegration process  
(iii) spontaneous                      (iv) all the above.
- Q20.** Semiconductors exhibit which of the following opto-electronic properties?  
(i) photoresistivity  
(ii) photoconductivity  
(iii) production of photoelectric currents  
(iv) all of the above