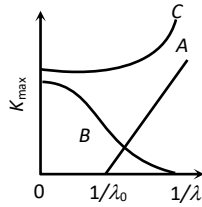
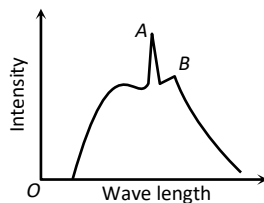




8. The correct graph between the maximum energy of a photoelectron and the inverse of wavelength of the incident radiation is given by the curve

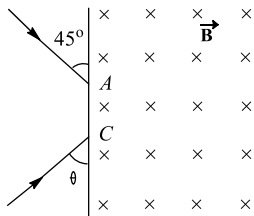


- a) A                                      b) B                                      c) C                                      d) None of the above
9. Two identical metal plates shown photoelectric effect by a light of wavelength  $\lambda_A$  falls on plate A and  $\lambda_B$  on plate B ( $\lambda_A = 2\lambda_B$ ). The maximum kinetic energy is
- a)  $2K_A = K_B$                       b)  $K_A < K_B/2$                       c)  $K_A = 2K_B$                       d)  $K_A = K_B/2$
10. Quantum nature of light is explained by which of the following phenomenon
- a) Huygen wave theory                      b) Photoelectric effect  
c) Maxwell electromagnetic theory                      d) De-Broglie theory
11. Energy from the sun is received on earth at the rate of 2 cal per  $\text{cm}^2$  per min. if average wavelength of solar light be taken at 5500 A then how many photons are received on the earth per  $\text{cm}^2$  per min?  
(Take  $h = 6.6 \times 10^{-34}$  Js, 1cal=4.2 J).
- a)  $1.5 \times 10^{13}$                       b)  $2.9 \times 10^{13}$                       c)  $2.3 \times 10^{19}$                       d)  $1.75 \times 10^{19}$
12. Which phenomenon best supports the theory that matter has a wave nature
- a) Electron momentum    b) Electron diffraction    c) Photon momentum    d) Photon diffraction
13. The figure represents the observed intensity of X-rays emitted by an X-ray tube as a function of wavelength. The sharp peaks A and B denote



- a) Band spectrum                                      b) Continuous spectrum  
c) Characteristic radiations                      d) White radiations
14. The frequency of a photon, having energy 100 eV is ( $h = 6.6 \times 10^{-34}$  J-s)
- a)  $2.42 \times 10^{26}$  Hz                      b)  $2.42 \times 10^{16}$  Hz                      c)  $2.42 \times 10^{12}$  Hz                      d)  $2.42 \times 10^9$  Hz
15. Which of the following have highest specific charge
- a) Positron                      b) Proton                      c) He                      d) None of these
16. Planck's constant has the dimensions of
- a) Energy                      b) Mass                      c) Frequency                      d) Angular momentum
17. The de-Broglie wavelength is proportional to
- a)  $\lambda \propto \frac{1}{v}$                       b)  $\lambda \propto \frac{1}{m}$                       c)  $\lambda \propto \frac{1}{p}$                       d)  $\lambda \propto p$

18. A parallel beam of light is incident normally on a plane surface absorbing 40% of the light and reflecting the rest. If the incident beam carries 60 W of power, the force exerted by it on the surface is
- a)  $3.2 \times 10^{-8} \text{N}$       b)  $3.2 \times 10^{-7} \text{N}$       c)  $5.12 \times 10^{-7} \text{N}$       d)  $5.12 \times 10^{-8} \text{N}$
19. Given below is a list of electromagnetic spectrum and its mode of production. Which one does not match
- a) Gamma rays – Radioactive of the nucleus  
 b) Ultraviolet – Magnetron valve  
 c) Infrared – Vibration of atoms and molecules  
 d) Radiowave – Rapid acceleration and deceleration of electrons in conducting wires
20. A proton of mass  $1.67 \times 10^{-27} \text{ kg}$  enters a uniform magnetic field of 1 T at point A as shown in figure, with a speed of  $10^7 \text{ ms}^{-1}$ . The magnetic field is directed normal to the plane of paper downwards. The proton emerges out of the magnetic field at point C, then the distance AC and the value of angle  $\theta$  will respectively be



- a) 0.7 m,  $45^\circ$       b) 0.7 m,  $90^\circ$       c) 0.14 m,  $90^\circ$       d) 0.14 m,  $45^\circ$