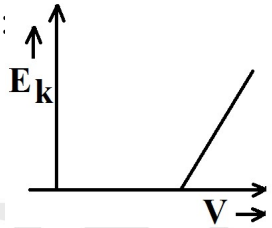
SHAHEEN GROUP OF INSTITUTIONS
Bidar (Head Office)

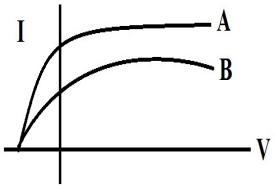
Class : NEET Repeaters Sub: Physics Worksheet–27 Date: 19-02-2019

Duel Nature

1. The work-function of a substance is 4.0 eV. The longest wavelength of light that can cause photoelectron emission from this substance is approximately:
   (A) 540 nm (B) 400 nm (C) 310 nm (D) 220 nm
2. Photoelectric effect takes place in element A. Its work function is 2.5 eV and threshold wavelength is λ. Another element B is having work function of 5 eV. Then find out the maximum wavelength that can produce photoelectric effect in B
   (A) λ/2 (B) 2λ (C) λ (D) 3λ
3. When a point source of monochromatic light is at a distance of 0.2 m from a photoelectric cell, the cut-off voltage and the saturation current are 0.6 vot and 18mA respectively. If the same source is placed 0.6 m away from the photoelectric cell then
   (A) The stopping potential will be 0.2 V. (B) The stopping potential will be 0.6 V.
   (C) The saturation current will be 6 mA. (D) The saturation current will be 18 mA.
4. Graph is plotted between maximum kinetic energy of electron with frequency of incident photon in Photo electric effect. The slope of curve will be:
   (A) Charge of electron
   (B) Work function of metal
   (C) Planck's constant
   (D) Ratio of Planck constant and charge of electron



5. The graphs show the variation of current I (y-axis). In two photocell A and B as a function of the applied voltage V(x-axis) when light of same frequency is incident on the cell. Which of the following is the correct conclusion drawn from the data?
   (A) Cathodes of the two cells are made from the same substance, the intensity of light used are different.
   (B) Cathodes are made from different substances and the intensity of light is the same
   (C) Cathode substances as well as intensity of light are different.
   (D) No conclusion can be drawn.



6. The ratio of de-Broglie wavelength of deuteron and proton accelerated through the same potential difference will be
   (A) $\frac{1}{\sqrt{2}}$ (B) $\sqrt{\frac{2}{1}}$ (C) $\frac{1}{2}$ (D) $\frac{2}{1}$
7. An electron is accelerated from rest, between two points A and B at which the potentials are 20V and 40V respectively. The De-Broglie wavelength associated with the electron at B will be
   (A) 0.75 Å (B) 7.5 Å (C) 2.75 Å (D) 2.75 m

8. The energy that should be added to an electron to reduce its De-Broglie wavelength from 10^{-10} to 0.5×10^{-10} m be :
(A) four times the initial energy (B) equal to initial energy
(C) twice the initial energy (D) thrice the initial energy

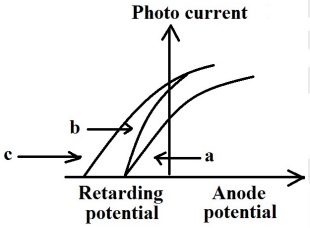
9. The De-Broglie wavelength associated with electrons revolving round the nucleus in a hydrogen atom in ground state, will be -
(A) 0.3 Å (B) 3.3 Å (C) 6.62 Å (D) 10 Å

10. A photon of wavelength 4400 Å is passing through vaccum. The effective mass and momentum of the photon are respectively
(A) 5×10^{-36} kg, 1.5×10^{-27} kg–m/s (B) 5×10^{-35} kg, 1.5×10^{-26} kg–m/s
(C) zero, 1.5×10^{-26} kg–m/s (D) 5×10^{-36} kg, 1.67×10^{-43} kg–m/s

11. A proton is about 1840 tunes heavier than an electron. When it is accelerated by a potential difference of 1 kV, its kinetic energy will be
(A) 1840 keV (B) 1/1840 keV (C) 1 keV (D) 920 keV

12. Monochromatic light of frequency 6.0×10^{14} Hz is produced by a laser. The power emitted is 2×10^{-3} W. The number of photons emitted on the average, by the source per second is
(A) 5×10^{14} (B) 5×10^{15} (C) 5×10^{-16} (D) 5×10^{17}

13. The figure shows a plot of photo current versus anode potential for a photo sensitive surface for three different radiation. Which one of the following is a correct statement?



(A) curves (b) and (c) represent incident radiations of same frequency having same intensity.
(B) curves (a) and (b) represent incident radiations of different frequencies and different intensities.
(C) curves (a) and (b) represent incident radiations of same frequency but of different intensities.
(D) curves (b) and (c) represent incident radiations of different frequencies and different intensities.

14. A source S_1 is producing, 10^{15} photons per second of wavelength 5000 Å. Another source S_2 is producing 1.02×10^{15} photons per second of wavelength 5100 Å.
Then. (power of S_2)/(power of S_1) is equal to
(A) 0.98 (B) 1.00 (C) 1.02 (D) 1.04

15. A photoelectric surface is illuminated successively by monochromatic light of wavelength λ and $\lambda/2$. If the maximum kinetic energy of the emitted photoelectrons in the second case is 3 times that in the first case, the work function of the surface of the material is :(h=Plank's constant, c=speed of light)
(A) $\frac{hc}{3\lambda}$ (B) $\frac{hc}{2\lambda}$ (C) $\frac{hc}{\lambda}$ (D) $\frac{2hc}{\lambda}$

1-C	**2-A**	**3-B**	**4-C**	**5-A**	**6-A**	**7-C**	**8-D**	**9-B**	**10-A**	**11-C**	**12-B**	**13-C**	**14-B**	**15-B**