**Q.1** When a point source is kept at a distance **d** from the cathode plate, the stopping potential was found to be $\mathbf{V_s}$. If the distance is now reduced to half of the original, the change in stopping potential is,

**(A)**0 % **(B)**50 % **(C)**100 % **(D)**200 %

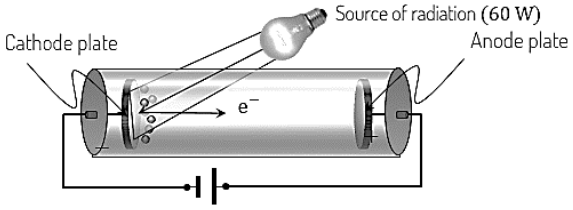
**Q.2** For given experimental setup, to increase photocurrent, which of the following ways can be used

**(A)**Source is brought near to window

**(B)** A 60 W bulb is replaced with 100 W bulb

**(C)**Frequency of radiation is increased

**(D)**Both (a) and (b)




**Q.3** Find the incorrect statement with respect to photoelectric effect.

**(A)**Photo-electric emissions is an instantaneous process with less than $10^{-9}$ time lag.

**(B)**Photo electric effect takes more time to occur when incident radiation is extremely dim than usual.

**(C)**Saturation current is found to be proportional to the intensity of incident radiation.

**(D)**The stopping potential is independent of its intensity for a given photo sensitive material &incident radiation.

**Q.4** The maximum kinetic energy of an electron emitted due to photoelectric effect is $\mathbf{20\ nJ}$. For the same incident radiation and same metal surface at same physical conditions, the stopping potential of the electron would be,

**(A)**$1.25 \times 10^9$ V **(B)**125 MV **(C)**125 GV **(D)**125 KV

**Q.5** Potassium surface with a work function of $\mathbf{2.30\ eV}$ is irradiated with a radiation of frequency $\mathbf{9.5 \times 10^{14}\ Hz}$. Negative potential to be applied to the anode to ensure no electrons reach the anode plate, is,

**(A)**3.93 eV **(B)**2.3 eV **(C)**8.69 eV **(D)**1.63 eV

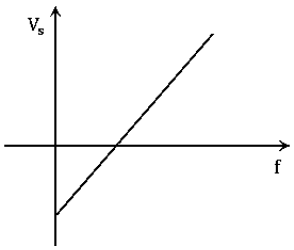
**Q.6** Light of wavelength $\mathbf{2000\ \dot{A}}$ falls on a metallic surface whose work function is $\mathbf{4.2\ eV}$. Calculate the stopping potential. $(\mathbf{hc = 12400\ eV\dot{A}})$

**(A)**12 V **(B)**2 V **(C)**3 V **(D)**6 V

**Q.7** Find the slope of the graph shown in the figure.

Where: $V_s \rightarrow$ stopping potential (V)f $\rightarrow$ frequency (Hz)

**(A)**h **(B)**h/e **(C)**hc/e **(D)**he



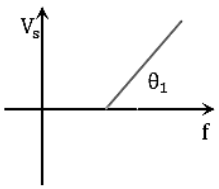

**Q.8** Find the value of $\frac{\tan\theta_1}{\tan\theta_2}$

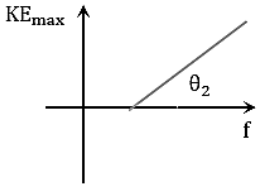
Where, $\mathbf{V_s}$ ⇒stopping potential ($\mathbf{V}$)

$\mathbf{f}$ ⇒Frequency of radiation ($\mathbf{s^{-1}}$)

$\mathbf{KE}_{max}$ ⇒Maximum kinetic energy ($\mathbf{J}$).

**(A)**1/e **(B)**1 **(C)**h/e **(D)**e



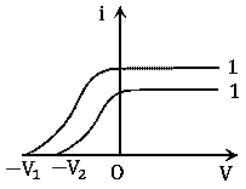



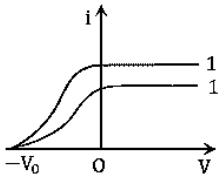

**Q.9** In an experiment on photoelectric effect, light of wavelength **400 nm** is incident on a cesium plate at the rate of $\mathbf{5.0\ W}$. The potential of the collector plate is made sufficiently positive with respect to the emitter so that the current reaches its saturation value. Assuming that on the average, one out of every $\mathbf{10^6}$ photons is able to eject a photoelectron, find the photocurrent in the circuit. [Use $\mathbf{hc = 1240\ eV(nm)}$]

**(A)**3.2 μA **(B)**1.6 μA **(C)**4.8 μA **(D)**6 μA

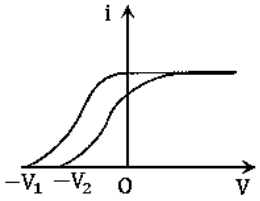
**Q.10** A beam of light consisting of two wavelengths **420 nm** and **540 nm** falls on two metals **1** and **2** of work functions $\mathbf{4.0\ eV}$ and $\mathbf{2.5\ eV}$ respectively. If the intensities of the two wavelengths are equal, which of the graphs shown in figure represents the variation of photoelectric current ($\mathbf{i}$) with voltage ($\mathbf{V}$) is correct? [Take $\mathbf{c = 1240\ eV(nm)}$ ]

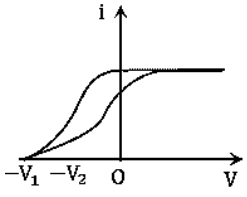
**(A)**




**(C)**



**ANSWER KEY**

| Q. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|---|---|---|---|---|---|---|---|---|---|---|
| **Sol.** | (A) | (D) | (B) | (C) | (D) | (B) | (B) | (A) | (B) | (A) |