- Q.1Threshold frequency for different materials -<br/>(A)Are same<br/>(C)Depend on incident light(B)are different<br/>(D)none of these
- Q.2 In photoelectric effect theory, it is assumed that (A)Multiple photons give all of its energy to a single electron.
  (B)One photon gives all of its energy to multiple electrons.
  (C)One photon gives all of its energy to a single electron.
  (D)None of these
- Q.3 If the energy of the incident photons is equal to the work function of the material, then (A)Electrons will knock out with no kinetic energy.
  (B)Electrons will knock out with some kinetic energy.
  (C)No emission will take place
  (D)Data insufficient
- **Q.4** The graph shows the relationship between the maximum kinetic energy of electrons flying off the surface of a metal versus the frequency of light striking the metal surface as part of the photoelectric effect. According to this graph, what will happen when light of frequency  $6 \times 10^{14}$  Hz strikes the metal surface?

(A)Electrons will be emitted with negative kinetic energy.

**(B)**Small number of electrons will be emitted.

(C) The light will only knock the loose electrons off the surface of metal.

(D)No electrons will be emitted.



- **Q.5** To particles of equal mass  $5 \times 10^{-30}$  kg moving towards each other, collide and come to rest. This collision produces a photon. If the velocity of the particles is  $10^6$  ms<sup>-1</sup>. What is the frequency of light emitted. (Ignore the relativistic effects) **(A)** 7.54 × 10<sup>18</sup> Hz **(B)** 7.54 × 10<sup>15</sup> Hz **(C)** 3.77 × 10<sup>15</sup> Hz **(D)** 3.77 × 10<sup>12</sup> Hz
- Q.6 Find the threshold wavelength of light that would eject photoelectrons for a silver surface. The work function for silver is 4.8 eV.
   (Givenhc = 1240 eVnm)
   (1)250

<b>(A)</b> 259 nm	<b>(B)</b> 220 nm	<b>(C)</b> 350 nm	<b>(D)</b> 540 nm

**Q.7** The work function( $\phi$ ) of some metals is listed below. [Use hc = 1240 eVnm]

Metal	Work Function $(\phi)(eV)$	]	
Li	2.4	-	
Cu	4.8	-	
Ag	2.3	_	
107	4.75	_	
vv	4.75		
The metal(a)	that above abote also tria amission		d hy light of ways longth 200 yrs
(A)Li	(B)Cu	(C)Ag	(D)W
<b>(A)</b> Li	<b>(B)</b> Cu	(C)Ag	(U)W

- Q.8 If the light of frequency 8.2 × 10<sup>-14</sup> Hz is incident on the metal, cut off voltage for photo electric emission is 2.03 V. The threshold frequency falls into which of the following region?
   (A)Infrared Region (B)Ultraviolet Region (C)Radio waves (D)X-Rays
- Q.9A photoelectric metal was exposed to the light of wavelength<br/>1550 Å. If the work function of the<br/>metal is 3. 2 eV, the velocity of the ejected electron will be<br/>(A)Zero(B) $1.3 \times 10^7 \text{ ms}^{-1}$ (C) $2.6 \times 10^7 \text{ ms}^{-1}$ (D)Other than above
- Q.10 The work functions of silver & sodium are 4.6 eV and 2.3 eV respectively. The ratio of the maximum kinetic energies of emitted electrons when illuminated by wavelength 155 nm is (hc = 1240 eVnm)
  (A)0 ( (D)0 2 (D)0 2 (D)0 2 (D)0 05 (D)00 (D)0 05 (D)0 05 (D)00 (D)00 (D)000

<b>(A)</b> 0.6	<b>(B)</b> 0.3	<b>(C)</b> 0.2	<b>(D)</b> 0.95

## ANSWER KEY

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