Physics

Reg.No. : ☐☐☐☐☐☐

I.Answer all the questions.

II.Use Blue pen only.

Time : 01:00:00 Hrs

Total Marks : 55

Part-A

5 x 1 = 5

1) For a given frequency of incident light , the stopping potential .... with respect to the instensity of incident light.

    (a) decreases   (b) increases   (c) does not change   (d) becomes zero

2) The photo electric current produced in photo electric effect is directly proportional to .... emitted per second.

    (a) the number of electrons   (b) reciprocal of number of electrons   (c) square of number of electrons   (d) square root of number of electrons

3) For a given frequency of incident light , the photoelectric current .... with respect to the intensity of light .

    (a) does not change   (b) decreases   (c) increases   (d) becomes zero

4) The energy requried to bring the fast electrons to rest is equal to the .... energy of the fast electrons.

    (a) Kinetic   (b) potential   (c) mechanical   (d) electrical

5) For a given instensity , the stopping potential .... with the increases of frequency of incident light .

    (a) decreases   (b) increases   (c) does not change   (d) becomes zero

Part-B

6 x 3 = 18

6) What are the factors on which is photoelectric current depend ?

7) Give plank's quantum theory .

8) Mention the types of photo electric cell.

9) Give any three uses of photoelectric cells.

10) How does a burglar alarm works .

11) State the de - Broglie's hypothesis .

Part-C

5 x 5 = 25

12) The photoelectric threshold wavelength of a metal is 5000 Å. Find i) the work function in electron volts and ii) the kinetic energy of the photoelectrons in electron volts, ejected by the light of wave length 4000 Å

13) Red light of wavelength 670 nm produces photoelectrons from a certain metal which requires a stopping potential of 0.5 V. What is the work function and threshold wavelength of the metal?

14) Calculate the velocity of a photoelectron if the work function of the target material is 1.24 eV and the wave length of incident light is $4.36 \times 10^{-7}\ m$.

15) a)   The rest mass of an electron is $9.1 \times 10^{-31}\ kg$. What will be its mass if it moves with $4/5^{th}$ of the speed of the light?

    (OR)

   b)   Calculate the thresold frequency of photons which can remove photoelectrons from (i) caesium and ii) nickel surface (work function of caesium is 1.8 eV and work function of nickel is 5.9 eV).

****