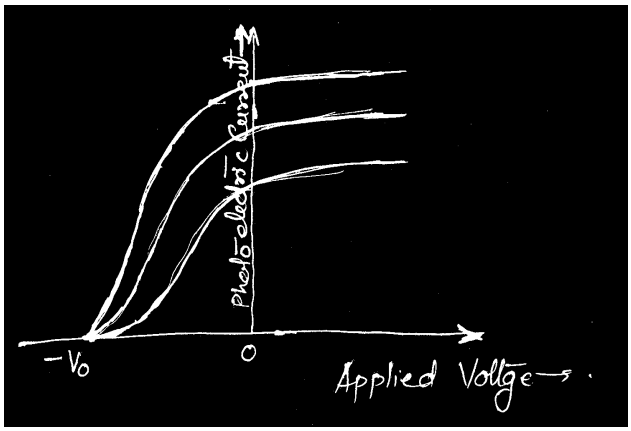
CLASS : XII
PHYSICS ASSIGNMENT

UNIT – VII

DUAL NATURE OF RADIATION & MATTER

1. Write dimensions of Planck's constant.
2. Name a phenomenon which illustrates the Particle nature of light.
3. Define electron volt & give its values in joule.
4. What is the effect of increasing the
   (i) frequency
   (ii) intensity of incident radiations on the photoelectron emitted.
5. What is photoelectric effect. State the laws of photoelectric emission?
6. Define work function of a material & write an expression for it in terms of the threshold frequency of photoelectric emission.
7. The work function of aluminium is 4.2 ev. If two photons, each of energy 3ev, strike the aluminum surface, will the emission of electron be possible.
8. Obtain an expression for the velocity acquired by an electron when it is accelerated through a potential difference 'V'.
9. What is a photo cell. Mention three applications of photocells.
10. What is the energy of photons at the violet end of the visible spectrum. The wavelength of light for violet is about 390nm.
11. What is Einstein's photoelectric equation.
12. Why are alkali metals most suitable for photoelectric emission.
13. Define cut off or stopping potential.
14. An electron & proton are possessing the same amount of Kinetic energy. Which of the two has larger debroglie wavelength.
15. A particle is moving three times as fast as an electron. The ratio of the debroglie wavelength of the particle to that of the electron is 1.813×10^{-4}. Calculate the particles mass & identify the particle.
16. How does kinetic energy of the photoelectrons emitted in a photocell vary if the intensity of the incident radiation is doubled.
17. When light of wavelength 400nm is incident on cathode of a photocell, the stopping potential recorded is 6V. If the wavelength of the incident light is increased to 600nm calculate the new stopping potential.
18. In a photoelectric effect experiment, the following graphs were obtained between the photoelectric current & the applied voltage. Name the characteristic of the incident radiation that was kept constant in this experiment.



19. Draw graph to show variation of stopping potential with frequency of incident radiation. How can the value of Planck's constant be determined by this graph?
20. Why is wave nature of matter not apparent in our daily observation?