Higher Secondary Revision Examination 2018-19 – Unit:6

TOTAL MARKS: 40

PHYSICS

N.B. i) Answer all the following.
   ii) Choose and write the correct answer with option.

1. According to Bohr’s postulates, which of the following quantities take discrete values?
   a) kinetic energy  b) potential energy  c) angular momentum  d) momentum

2. The first excitation potential energy or the minimum energy required to excite the atom from ground state of hydrogen atom is
   a) 13.6 eV  b) 10.2 eV  c) 3.4 eV  d) 189 eV

3. A Coolidge tube operates at 24800 V. The maximum frequency of X – radiation emitted from Coolidge tube is
   a) 6 x 10^18 Hz  b) 3 x 10^18 Hz  c) 6 x 10^8 Hz  d) 3 x 10^8 Hz

4. The chromium ions doped in the ruby rod
   a) absorbs red light  b) absorbs green light  c) absorbs blue light  d) emits green light

5. The amount of absorbed intensity of the X – ray of intensity I, when passing through substance of thickness dx having absorption coefficient μ is given by
   a) dI = μdI dx  b) dI = -μI dx  c) μ = I dx / dI  d) μ = I dx / dI

6. A X – ray of wavelength 1 A0 incidents on a crystal of lattice space 2 A0. The inclined angle of diffraction to get second order maximum is
   a) 60°  b) 45°  c) 90°  d) 30°

7. Splitting up of spectral lines in the presence of electric field is
   a) Zeeman effect  b) Thomson’s effect  c) field effect  d) Stark effect

8. In holography, which of the following are recorded on a photographic film?
   a) Amplitude and frequency  b) phase and frequency  c) phase and amplitude  d) Amplitude, phase and frequency

9. In Millikan’s experiment, the plates are kept at a distance of 16 mm and are maintained at a potential difference of 10000 V. The electric intensity is
   a) 62.5 V/m  b) 6.25 x 10^5 V/m  c) 6.25 x 10^3 V/m  d) 1.6 x 10^5 V/m

10. In a hydrogen atom what will be the radius of 5th orbit if the radius of the first orbit is 0.53 A0?
    a) 2.65 A0  b) 5.3 A0  c) 0.106 A0  d) 13.25 A0

II. Answer for any four of the following. Question No.15 is compulsory: 4 x 2 = 8

11. Distinguish between hard X-rays and soft X-rays.
12. Define ionization potential.
13. What are the important characteristics of Laser?
14. State Moseley’s law.
15. The Rydberg’s constant for hydrogen is 1.097 x 10^7 m^-1. Calculate the minimum wavelength of Lyman series.

III. Answer for any four of the following. Question No.20 is compulsory: 4 x 3 = 12

16. (i) What is hologram? Write any four properties of Canal rays.
17. (i) State Bragg’s law. (ii) Write any three industrial applications of Laser.
18. State the postulates of Bohr’s atom model.
20. A beam of electrons moving with a uniform speed of 5 x 10^6 m s^-1 is projected to the uniform magnetic field where B = 2 x 10^-2 wb/m². Calculate the path of the beam in the magnetic field.

IV. Answer all the following: 2 x 5 = 10

21. a) Describe the J.J. Thomson method for determining the specific charge of electrons.
   (or)
   b) (i) Explain how a Bragg’s spectrometer can be used to determine the wavelength of X – rays.
   (ii) What are the facts established by Laue’s experiment?

22. a) Obtain the expression for the radius of nth orbit of electron based on Bohr’s theory.
   (or)
   b) With the help of energy level diagram, explain the working of He-Ne laser.

♫ ♫ ♫ WISH YOU ALL THE BEST – BY : JANBAZHAGAN M.Sc., M.Ed, PGDCA., PGT (PHYSICS) ♫ ♫ ♫