(6 pages)

Reg. No. : .....

Code No. : 30748 E **Sub. Code : EEPH 21**

B.Sc. (CBCS) DEGREE EXAMINATION, NOVEMBER 2024.

Second Semester

Physics — Elective

ALLIED PHYSICS — II

(For those who joined in July 2023 onwards)

Time : Three hours Maximum : 75 marks

PART A — (10 × 1 = 10 marks)

Answer ALL questions.

Choose the correct answer :

1. The straight fringes formed with air wedge are due to

   (a) interference

   (b) diffraction

   (c) polarisation

   (d) total internal reflection

2. A polarimeter is a device used to measure

   (a) polarisation

   (b) interference

   (c) diffraction

   (d) total internal reflection

3. Atomic number is

   (a) no of protons in the nucleus of an atom

   (b) no of neutrons in the nucleus of an atom

   (c) no of electrons in the atom

   (d) both (a) and (c)

4. Who formulated the periodic table?

   (a) George (b) Mathew

   (c) Mendeleev (d) None of these

5. The range of nuclear force is

   (a) 10^{-10} m (b) 10^{-8} m

   (c) 10^{-15} m (d) 1 m

6. 1.9 m.c is equal to _____

   (a) 9.315 MeV (b) 931.5 MeV

   (c) 931.5 KeV (d) 9315 MeV

7. The theory of relativity was proposed by

(a) Einstein (b) Newton

(c) Raman (d) Heisen-berg

8. Frame of reference is a

(a) co-ordinate system (b) co-axial system

(c) coincidence system (d) all the above

9. A zener diode can be used as a

(a) reference voltage (b) voltage regulator

(c) peak clipper (d) all the above

10. ———— and ———— are semiconductors.

(a) Germanium, silicon

(b) Silicon, uranium

(c) Boron, silicon

(d) All the above

PART B — (5 × 5 = 25 marks)

Answer ALL questions choosing either (a) or (b).
Each answer should not exceed 250 words.

11. (a) Explain the interference on thin films.

Or

(b) Write a short notes on :

(i) Polarisation

(ii) Optical activity.

12. (a) Explain Pauli's exclusion principle.

Or

(b) Write a short note on :

(i) Mass number

(ii) Atomic number

(iii) Zeeman effect.

13. (a) Explain binding energy curve.

Or

(b) State the differences between nuclear fission and nuclear fusion.

14. (a) Explain Einstein's mass-energy relation.

Or

(b) State and explain the postulates of Einstein's special theory of relativity.

15. (a) Explain the characteristics of a zener diode.

Or

(b) Write a short note on : e-vehicles and EV charging stations.

PART C — (5 × 8 = 40 marks)

Answer ALL questions choosing either (a) or (b).
Each answer should not exceed 600 words.

16. (a) Define : Grating. Describe the experiment to the wavelength of light.

Or

(b) Write a short note on : (i) interference (ii) applications of optical activity in sugar industries and (iii) air wage.

17. (a) Explain Bohr atom model.

Or

(b) State and explain Einstein's photoelectric equation.

18. (a) Define : Binding energy. Explain binding energy curve and its importance.

Or

(b) Define : Radioactivity. Explain nuclear chain reaction. List the uses of radioactivity.

19. (a) Discuss the relativistic variation of mass with velocity.

Or

(b) State and explain the postulates of Einstein's special theory of relativity.

20. (a) Discuss the theory and working of p – n junction diode with a suitable diagram.

Or

(b) Describe the principle, construction, working and advantages of a Zener diode.

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