

D.K.M. COLLEGE FOR WOMEN (AUTONOMOUS), VELLORE-1**SEMESTER EXAMINATIONS****APRIL – 2018****15CAPH2A****ALLIED: PHYSICS - II****Time : 3 Hrs****Max. Marks : 75****SECTION-A (10 x 2 = 20)****Answer ALL the questions.**

1. What is meant by matter waves?
2. Write a note on dual nature of an electron.
3. State the law of conservation of charge.
4. Define Threshold Energy.
5. What are miller indices?
6. What is crystallography?
7. Define numerical aperture.
8. Give the principle of fiber optic communication.
9. State Demorgan's theorem.
10. Write the basic laws of Boolean algebra.

SECTION-B (5 x 5 = 25)**Answer any FIVE of the following questions.**

11. Derive the equation for De – Broglie wavelength.
12. Give an account of Heisenberg's uncertainty principle and find out the position and momentum of an electron based on uncertainty principle.
13. Discuss the process of radio carbon dating.
14. Tabulate the seven crystal system with their Bravais lattices.
15. Distinguish between ionic bond and covalent bond.
16. What are the advantages of optical fibre over the co-axial cables?
17. Explain the function of J-K flip-flop with truth table.
18. Discuss merits and demerits of IC fabrication.

SECTION-C (3 x 10 = 30)**Answer ALL the questions.**

19. (a) Explain about the experiment of G. P. Thomson on the diffraction of electron and the results obtained.

(Or)

(b) Derive an expression the Q – value of nuclear reaction and explain its cases.

20. (a) What do you mean by the term bonding in solids? Explain all types of bonding.

(Or)

(b) Explain the fiber optic communication system and also give the merits of fiber optic communication system.

21. (a) Describe the fabrication of diode and transistor by monolithic technology.

(Or)

(b) How the NAND and NOR gates are used as universal building blocks? Explain.