Sacs.1102   Engineering Physics (2+1)   Marks:50
Time: 2 hours

I   **State True or False**   (10x1=10)
1. The spin magnetic moments of electrons are responsible for the Ferromagnetism.
2. The temperature at which resistance of a material becomes zero and the material changes to a superconductor is called Critical temperature.
3. Light amplification by spontaneous emission of radiation is called LASER.
4. The Basic principle of optical fiber is Total internal reflection.
   Fill in the blanks
5. Materials that do not have permanent magnetic dipoles are_____.
   Answer the following
6. Define Interference.
7. What is Zeeman effect?
8. Define Paschen-Back effect.
9. Mention any one application of optical fiber.
10. Define stimulated emission.

II   **Write short notes on ANY FIVE of the following**   (5x2=10)
1. How the Newton's rings are alternate bright and dark fringes?
2. Define Intrinsic and Extrinsic semiconductor.
3. What is Josephson's effect?
4. Define Energy gap of a semiconductor.
5. What is Population inversion?
6. Mention any two application of nanotechnology in Agriculture.
7. What is nano drug delivery system?

III   **Answer ANY FIVE of the following**   (5x4=20)
1. Explain Raman spectroscopy.
2. Mention any two properties each of Diamagnetic and ferromagnetic materials.
3. Explain type I and type II superconductor.
4. Explain briefly the principle and working of an interference filter.
5. Explain Holography with neat diagram.
6. Explain law of mass action.
7. Explain nano sensors.

IV   **Write an essay on ANY ONE of the following**   (1x10=10)
1. Explain in detail of Langevin theory of dia and para magnetism.
2. Explain the construction and working of He-Ne Laser with energy level diagram.

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