

Roll No.

**BE-201**

**B.E. I & II Semester**

Examination, December 2016

**Engineering Physics**

**Time : Three Hours**

**Maximum Marks : 70**

**Note:** This question paper carries Eight questions. Attempt any five questions.

1. State Heisenberg's Uncertainty Principle. Prove that

$$\Delta x \cdot \Delta p \geq \frac{h}{2}$$

OR

Derive energy Eigen values and wave function for a particle trapped in a one dimensional square potential well.

2. What is Interference ? Give conditions for sustainable interference. Explain Newton's Ring Experiment.

OR

What is double refraction? Explain principle, construction and working of Nicol prism.

3. What is particle accelerator? Describe any one particle accelerator with its limitations.

OR

Describe properties of nucleus. Explain any one nuclear model (Liquid Drop model or Shell model) with their merits and demerits.

4. What are Semiconductors. Differentiate between intrinsic and extrinsic semiconductor. Explain the V-I characteristics of zener diode?

OR

What is Superconductivity? Differentiate between Type-I and Type-II superconductors.

5. What is Laser? Explain its properties. How stimulated emission is different from spontaneous emission?

OR

Describe construction and working of any one laser.

6. Describe five applications of Laser in our daily life.

OR

Describe the principle of communication in optical fibre. What are step index and graded index fibre?

7. Describe principle and working of any one mass spectrograph.

OR

Describe the construction and working of GM counter. How quenching is achieved in it?

8. Write short note (any five)

- a) Hall effect
- b) Brewster's law
- c) Michelson's Interferometer Experiment
- d) Quarter and Half wave plate
- e) Diffraction
- f) Einstein's A and B Co-efficients
- g) Meissner Effect
- h) Tunnel Diode
- i) Effective mass of electron
- j) Semi-Empirical Mass

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