

Roll No

BE-201 (GS)
B.E. I & II Semester Examination, June 2020
Grading System (GS)
Engineering Physics
Time : Three Hours

Maximum Marks : 70

- Note:** i) Answer any five questions.
 ii) All questions carry equal marks.

1. Find out the relationship between group velocity (v_g) and wave velocity (v_p).

2. State Heisenberg's Uncertainty Principle. Prove that $\Delta x \cdot \Delta p \geq \frac{\hbar}{2}$.

OR

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

3. Write a note on:

- a) Michelson's interferometer.
- b) Newton's rings.

4. Write the construction and working of He-Ne laser with diagram.

5. Explain in detail the following process.

- a) Spontaneous and stimulated Emission.
- b) Population inversion.

OR

Obtain energy level expression for particle trapped in infinitely deep square well potential.

6. Derive an expression for time independent Schrodinger wave equation to particle trap in a one dimensional square potential well.

OR

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

7. What is a carbon-dioxide (CO_2) laser? Explain its setup along with vibrational modes of CO_2 molecule.

OR

Describe five applications of Laser in our daily life.

8. Write short note (any two)

- a) Brewster's law
- b) Diffraction
- c) Einstein's A and B Co-efficients
- d) Semi-Empirical Mass
