Roll No. | | | | | | | | | | | | **Total No. of Pages: 02**

Total No. of Questions: 09

B.Tech (CE / CSE / EE / ECE / ME) (Sem – 1,2)

ENGINEERING PHYSICS

Subject Code: BTPH-101

M Code: 54105

Date of Examination : 06-06-2023

Time: 3 Hrs. **Max. Marks: 60**

INSTRUCTIONS TO CANDIDATES:

1. **SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.**
2. **SECTION - B & C have FOUR questions each, carrying EIGHT marks each.**
3. **Attempt any FIVE questions from SECTION B & C, selecting atleast TWO questions from each of these SECTIONS B & C.**

SECTION-A

1. Write briefly :

a) Explain Ferro and Ferri magnetism.

b) Write the physical significance of gradient.

c) What is BCS theory?

d) What are the conditions for laser action?

e) Define couplers and connectors.

f) What for the Michelson-Morley experiment was performed?

g) Define group and phase velocities.

h) Define space lattice.

i) Explain carbon nanotubes.

j) Define uncertainty principle.

SECTION-B

2. Explain the meaning of each Maxwell's equation. What was the problem with the Ampere's law?

3. Mention different types of superconductors. How type-II superconductor differs from type-I superconductor?

4. a) Describe Bragg's spectrometer.

   b) The X-ray of wavelength 0.154nm were obtained using Molybdenum BCC metal as target. The diffraction was obtained from the {200} planes at $2\theta = 58.535°$. Find lattice constant for Mo.

5. What is laser? Describe the principle, construction and working of He-Ne laser.

SECTION-C

6. What is am optical fiber? What is pulse dispersion? How it can be minimised?

7. How does mass vary with relativistic velocity? Develop its relation.

8. Develop time-dependent and time-independent Schrodinger wave equations.

9. What is meant by 'surface-to-volume ratio'? Discuss sol-gel method for the synthesis of nanomaterials.

NOTE : Disclosure of Identity by writing Mobile No. or Marking of passing request on any paper of Answer Sheet will lead to UMC against the Student.