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V Semester B.Sc. Examination, March/April - 2023
(Semester : Scheme) (CBCS)
PHYSICS (SEC) (Paper - I)
Lasers And Fibre Optics (Elective-II)

Time : 2 Hours **Max. Marks : 40**

Instruction : *Answer any Two questions from part- A, any Two from part -B. and any four questions from part - C.*

Part - A

1) a) Explain coherence and divergence of a laser beam. [4]

b) Describe the method to select a single line from laser source using diffraction grating. [4]

2) a) What is meant by pumping? Discuss three level pumping scheme for lasing. [4]

b) What are optical resonator? Explain. [4]

3) a) Describe the construction and working of Nd-YAG laser. [5]

b) Explain quantum well lasers. [3]

Part - B

4) a) Describe different types of optical fibers with reference to refractive index profile and model they support. [6]

b) Discuss the advantages of optical fiber. [2]

5) With the help of Block diagram, Explain the optical communication system. [8]

P.T.O.

6) a) What is material dispersion and wave guide dispersion. [4]

b) The core diameter of an optical fibre cable is 60 μm and used at a medium light of wave length 900nm. Find its V-number Numerical aperture of fibre = NA = 0.30. [4]

Part - C

7) a) What is surface emitting lasers. [2]

b) Mention types of laser modes. [2]

c) Define bit rate. [2]

d) What is an opto coupler. [2]

e) What is numerical aperture. [2]

f) Mention gain threshold condition formula for laser oscillation. [2]