K-423

Total Pages : 3   Roll No. ....

MSCPH-551

Optoelectronics

M.Sc. Physics (MSCPH)

4th Semester Examination, 2023 (Dec.)

Time : 2 Hours]   **Max. Marks : 70**

Note : This paper is of Seventy (70) marks divided into two (02) Sections A and B. Attempt the questions contained in these sections according to the detailed instructions given therein. Candidates should limit their answers to the questions on the given answer sheet. No additional (B) answer sheet will be issued.

SECTION–A

(Long Answer Type Questions)

Note : Section 'A' contains Five (05) long answer type questions of Nineteen (19) marks each. Learners are required to answer any Two (02) questions only.

(2×19=38)

1. What do you understand by radiation in semiconductors? Establish relation between absorption and emission spectra, near band gap radioactive transitions.

2. What do you understand by Laser diode? Discuss its principle and working. Write applications of Laser diode.

3. What do you understand by propagation of light through optical fiber? Discuss the concept of numerical aperture.

4. What is light emitting diode (LED)? Explain its working principle and state factor on which the colour of light emitted by it depends.

5. Write short note on any *two* of the following :
   (a) Solar energy spectrum.
   (b) Optoelectronic detectors.
   (c) LED.
   (d) PIN photodiodes.

SECTION–B
(Short Answer Type Questions)

Note : Section 'B' contains Eight (08) short answer type questions of Eight (08) marks each. Learners are required to answer any Four (04) questions only. (4×8=32)

1. What are modulated barrier photodiodes? Explain in details.

2. Explain working of hetero junction LED.

3. What do you understand by Pulse broadening in Optical fiber?

4. Write short note on photovoltaic devices and their application.

5. What do you understand by alloy semiconductor? Explain in detail.

6. What is photo transistor? Discuss working of it.

7. Explain in details about cleaved coupled cavity laser.

8. Write short note on Frequency response and modulation bandwidth in LED.

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