

Total No of Questions: [12]

SEAT NO. :

[Total No. of Pages : 03]

B.E. 2008 (ELECTRONICS)
OPTICAL AND MICROWAVE COMMUNICATION
(Elective - III) (Semester - II)

Time: 3 Hours

Max. Marks : 100

Instructions to the candidates:

- 1) Answer Q1 or Q2, Q3 or Q4, Q5 or Q6 from Section I and Q7 or Q8, Q9 or Q10, Q11 or Q12 from section II.
- 2) Answers to the two sections should be written in separate answer books.
- 3) Neat diagrams must be drawn wherever necessary.
- 4) Figures to the right side indicate full marks.
- 5) Use of Calculator is allowed.
- 6) Assume Suitable data if necessary.

SECTION I

- Q1) a) Explain the optical fiber communication system with neat block schematic. [06]
- b) State the advantages and limitations of optical fiber communication system. [06]
- c) Explain different types of optical connectors. [06]

OR

- Q2) a) Explain the principal of light propagation through fiber. [06]
- b) Explain the working principal of APD. State its applications [06]
- c) Distinguish between step index and graded index fiber- [06]
- Q3) a) Describe the various losses in optical fiber communication system. [08]
- b) Explain the working principal of WDM with neat diagram. [08]

OR

- Q4) a) Describe the material dispersion in detail. [05]
- b) Distinguish between single mode and multimode fiber. [05]
- c) A silica optical fiber with a core diameter large enough to be considered by ray theory analysis has a core refractive index of 1.5 and a clad refractive index of 1.47. Determine [06]
- i) Critical Angle
- ii) Numerical aperture of the fiber.

iii) Acceptance angle in given fiber.

- Q5) a) Explain the laser heating in detail and state its applications. [08]
b) Describe interferometric method for the measurement of the length. State its advantages and disadvantages. [08]

OR

- Q6) a) Explain the measurement of pressure and temperature using optical sensors. State its merits and demerits. [08]
b) Write short notes on: [08]
 i) Laser Welding
 ii) Laser instruments for surgery.

SECTION II

- Q7) a) Explain various properties of waveguides in detail. [06]
b) Explain hybrid junction and state its applications. [06]
c) Explain the scattering Matrix of microwave passive network [06]

OR

- Q8) a) Explain the Magic Tee in detail and state its applications [06]
b) Write short notes on the following: [12]
 i) Gyrator
 ii) Isolator
 iii) Directional coupler

- Q9) a) Explain the working of TWT with neat diagram. [08]
b) Explain the Multi-cavity Klystron and state its demerits. [08]

OR

- Q10) a) Explain the working mechanism of Magnetron. State its applications. [08]
b) Write short notes on the following: [08]
 i) Two cavity Klystron Amplifier.
 ii) Reflex Klystron.

- Q11) a) Describe the satellite based microwave link with neat diagram. [08]

- b) Explain the mechanism of operation of IMPATT diode. [08]

OR

- Q12) a) Explain in detail the construction of Gunn diode. State its applications. [08]

- b) Write short notes on the following: [08]

i) PIN Diode.

ii) Varactor diode.