10

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 Q1or 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.