

**Scheme – E**  
**Sample Question Paper**

**Course Name : Electronics Engineering Group**

**Course Code : ET/EN/EX/EJ/ED/EI/DE**

**Semester : Sixth for ET/EJ/EN/EX/DE and Seventh for ED/EI**

**12271**

**Subject Title : Advance Communication Systems**

**Marks : 100**

**Times: 3 Hours**

---

**Instructions:**

1. All questions are compulsory.
2. Illustrate your answers with neat sketches wherever necessary.
3. Figures to the right indicate full marks.
4. Assume suitable data if necessary.
5. Preferably, write the answers in sequential order.

**Q.1A) Attempt any THREE**

**12 Marks**

- a. Explain TE & TM modes in rectangular wave guide.
- b. Give the working principle of PIN diode with construction.
- c. What are different types of Antenna Scanning Technique in Radar?
- d. Give the advantage of geo-stationary satellite.

**Q.1(B) Attempt any ONE**

**06 Marks**

- a. Give the principle of MTI Radar & how stationary target can be eliminated in it.
- b. Explain multi cavity Klystron used as an amplifier with its apple gate diagram.

**Q.2 Attempt any FOUR**

**16 Marks**

- a. Explain the construction of fiber optic cable.
- b. How waveguide differ from two wire transmission line?
- c. Give the application of reflex Klystron.
- d. How duplexer differ from diplexer?
- e. Explain MAGIC TEE in detail.

**Q.3 Attempt any FOUR**

**16 Marks**

- a. Define cut off frequency of wave guide, phase velocity, group velocity & guided wave length.
- b. How wave is propagated in rectangular wave guide?
- c. Compare LED & LASER (4 points).

- d. Explain the block diagram of OTDR.
- e. When the mean optical power launched into an 8 km length of fiber is  $120 \mu\text{W}$ , the mean optical power at the fiber output is  $120 \mu\text{W}$ . Determine the overall signal attenuation or loss in decibels through the fiber, assuming there are no connector or splices.

**Q.4 (a) Attempt any TWO**

**12 Marks**

- Give Radar range equation & explain the factor influencing Radar range.
- Draw & explain block diagram of optical fiber communication system.
- What are the different types of splicing techniques? Explain any one.

**Q.4 (b) Attempt any ONE**

**06 Marks**

- Draw & explain satellite sub system.
- Describe the construction detail and working principle of Traveling wave tube (TWT).

**Q.5 Attempt any FOUR**

**16 Marks**

- Describe the term foot print & station keeping.
- What are different types of losses occur in fiber optic.
- Explain the term dispersion of light.
- Compare optical fiber communication with satellite communication.
- Describe the working principle of light through optical fiber.

**Q.6 Attempt any FOUR**

**16 Marks**

- Give the advantages of optical fiber communication.
- Describe absorption and scattering with the help of light theory.
- Compare Rectangular and circular waveguide.
- Describe the concept of Doppler Effect.
- Why uplink frequency is greater than downlink frequency?