

17670

21819

3 Hours / 100 Marks

Seat No.

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- 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) Use of Non-programmable Electronic Pocket Calculator is permissible.

Marks

1. Attempt any FIVE :

20

- (a) Explain the TE & TM modes in rectangular wave guide.
- (b) With neat schematic, explain operation of two Cavity Klystron amplifier.
- (c) Draw neat sketch and explain working of PIN diode as on microwave component.
- (d) Draw neat block diagram of MTI Radar system. State its working principle.
- (e) Describe station keeping in Satellite Communication System.
- (f) Draw constructional diagram of gunn diode and list its applications.
- (g) Draw two hole directional coupler and explain its operation.

2. Attempt any FOUR :**16**

- (a) Compare waveguide and transmission line. (any 4 points)
- (b) Draw neat sketch of magnetron. Explain its operation in brief.
- (c) Draw and explain basic pulse Radar system.
- (d) Describe any two antenna scanning methods used in Radar with neat sketches of scanning patterns.
- (e) Explain concept of uplink and downlink frequencies in Satellite communication.
- (f) Draw neat block diagram of TTC and state the function of each block.

3. Attempt any TWO :**16**

- (a) Describe the operation of IMPATT diode with the help of well labelled sketches.
- (b) Define Radar beacons. Describe their typical usages.
- (c) Explain the concept of orbit and its different types with neat sketch.

4. Attempt any FOUR :**16**

- (a) Explain H-plane Tee with respect to waveguide.
- (b) Define cut-off frequency & phase velocity with respect to wave guide.
- (c) Explain construction working of PIN diode.
- (d) Draw labelled schematic of TWT and describe its working as amplifier.
- (e) Define the term : look angles, foot print in Satellite Communication System.
- (f) Draw block diagram of Satellite earth station transmitter and state function of each block.

5. Attempt any FOUR :**16**

- (a) Describe function of following microwave components with the help of neat sketch : (i) Flanges, (ii) Taper & Twist.
- (b) Describe working of magnetron with neat diagrams. List any two applications of it.
- (c) Describe working of microwave bipolar transistor with characteristics curve.
- (d) List any four factors influencing maximum range of Radar.
- (e) Describe A-scope display method used in Radar system.
- (f) Draw the block diagram of Communication subsystem of Satellite.

6. Attempt any FOUR :**16**

- (a) Enlist different types of bends. Draw the diagram of each type.
 - (b) List advantages of microwave tubes over conventional vacuum tube. (any four)
 - (c) Give specification and application of TRAPATT diode.
 - (d) Describe the working of CW Doppler Radar system with the help of block diagram.
 - (e) Describe the function of propulsion subsystem and antenna subsystem in satellite.
 - (f) State any two advantages and application of circular waveguide and also, draw the field patterns for dominant mode.
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