

17670

11920

3 Hours / 100 Marks

Seat No.

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- Instructions :**
- (1) All Questions are *compulsory*.
 - (2) Answer each next main Question on a new page.
 - (3) Illustrate your answers with neat sketches wherever necessary.
 - (4) Figures to the right indicate full marks.
 - (5) Assume suitable data, if necessary.
 - (6) Use of Non-programmable Electronic Pocket Calculator is permissible.
 - (7) Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.

Marks

1. (A) Attempt any THREE :

3 × 4 = 12

- (a) Define terms with respect to waveguide (i) Phase velocity (ii) Cut-off frequency.
- (b) List two applications of two cavity klystron and four specifications of the same.
- (c) Draw block diagram of basic pulse RADAR system and describe the function of each block.
- (d) Define the term look angles, foot print in satellite communication system.

(B) Attempt any ONE :

6

- (a) With neat diagram describe the wave propagation through rectangular waveguide. Also give the condition when propagation is in dominant mode.

- (b) Draw block diagram of MTI radar system and describe function of each block.

2. Attempt any FOUR :

16

- (a) Give advantages of circular waveguide over rectangular waveguide. State its applications.
- (b) Draw well labelled schematic of TWT and describe its working as amplifier.
- (c) Describe the terms uplink and downlink frequency with respect to satellite communication.
- (d) Draw block diagram of CW Radar System and describe its working principle.
- (e) List different orbits used for satellite communication. Also specify one application of each.
- (f) Draw block diagram of communication subsystem of satellite.

3. Attempt any FOUR :

16

- (a) Differentiate between waveguide and two wire transmission line. (any four points).
- (b) Draw the construction of PIN diode and describe its working.
- (c) Draw basic block diagram of RADAR system and describe its working.
- (d) Give frequency bands used for satellite communication with uplink and downlink frequency range.
- (e) Describe Telemetry tracking and control subsystem of satellite.
- (f) Describe working of microwave bipolar transistor with characteristics curve.

4. (A) Attempt any THREE : 12
- (a) Distinguish microwave circulator and isolator on the basis of function, construction application and number of parts.
 - (b) Describe the operation of IMPATT diode with the help of well labelled sketches.
 - (c) Define RADAR beacons. Describe their typical usage.
 - (d) Describe function of altitude control system.
- (B) Attempt any ONE : 6
- (a) Describe function of satellite earth station.
 - (b) Describe different antenna scanning methods used in radar with neat sketch of scanning pattern.
5. Attempt any FOUR : 16
- (a) Describe working of Magnetron with neat diagram.
 - (b) Draw sketch of Hybrid junction and state its function.
 - (c) Compare Reflex Klystron with two cavity Klystron (any four points)
 - (d) Describe Station keeping in satellite communication system.
 - (e) List and explain any four factors influencing maximum range of radar.
 - (f) Give two specifications and two applications of TRAPATT diode.
6. Attempt any FOUR : 16
- (a) Describe the operation of Gunn diode with well labelled diagram.
 - (b) Describe function of duplexer.
 - (c) Give two applications and two specifications of PIN diode.
 - (d) List two specifications and two applications of TWT.
 - (e) Describe two cavity Klystron with neat sketch.
 - (f) List advantages of microwave tube over vacuum tube (any four).
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