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Dec.-22-0317

EC-702 (Microwave and Radar Engineering)

B.Tech. 7th (CBCS)

Time : 3 Hours

Max. Marks : 60

The candidates shall limit their answers precisely within the answer-book (40 pages) issued to them and no supplementary/continuation sheet will be issued.

Note : Attempt five questions in all selecting one question from each section A, B, C, D and Section E is compulsory.

SECTION - A

1. Define Smith Chart and explain why it is useful in making transmission line calculations. (10)
2. A transmission line operating at 500 MHz has $Z_0 = 80\Omega$, $\alpha=0.004\text{Np/m}$, $\beta=1.5\text{ rad/m}$. Find the line parameters R, L, G, and C. (10)

SECTION - B

3. (a) What is the significance of slow wave structures used in microwave circuits? (7)
(b) Explain different slow wave structures with neat sketches. (3)
4. Draw the structure of 8 cavity magnetron and explain its bunching process. (10)

SECTION - C

5. Explain principle of operation of TRAPATT Diode with the help of neat diagram. Also mention its characteristics and applications. (10)

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6. What is transferred electron effect and how it is utilized in generating of microwave signal in Gunn diode? (10)

SECTION - D

7. Draw the block diagram and explain the working of pulse radar. (10)
8. Explain the basic principles of radar system and describe MTI radars. (10)

SECTION - E

9. (a) Explain V-I characteristics of Gunn Diode.
(b) What are degenerate modes?
(c) Define bunching process.
(d) Explain characteristic impedance in transmission line.
(e) Define VSWR.
(f) Define MTI radar.
(g) List the difference between microwave transistors and TEDs.
(h) Define the term skin depth.
(i) Define IMPATT.
(j) Define standing wave ratio. (10×2=20)