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10EC54

Fifth Semester B.E. Degree Examination, Dec.2019/Jan.2020

Microwaves and Radar

Time: 3 hrs.

Max. Marks:100

Note: Answer any FIVE full questions, selecting at least TWO full questions from each part.

PART – A

- 1 a. Derive the transmission line equations by the method of distributed circuit theory. (10 Marks)
b. What is impedance matching? Explain single stub matching and double stub matching. (10 Marks)
- 2 a. Derive electric and magnetic field equation in rectangular wave guides for TE modes. (10 Marks)
b. Explain faraday rotation and discuss microwave isolator. (10 Marks)
- 3 a. With a neat sketch, explain the TRAPATT diode and draw its characteristics. (10 Marks)
b. Explain the parametric amplifier with equivalent circuit. Give the advantages of parametric amplifier. (10 Marks)
- 4 a. State the properties of S-parameter. Explain S-matrix representation of multiport network. (10 Marks)
b. Explain symmetrical z and y matrix for reciprocal network. (10 Marks)

PART – B

- 5 a. With a neat diagram, explain the working of a precision type phase shifter. (10 Marks)
b. What are waveguide tees? With a neat diagram explain E-plane and H-plane tees. (10 Marks)
- 6 a. Explain briefly dielectric losses, ohmic losses and radiation losses in microstrip lines. (10 Marks)
b. How microwaves are transmitted? Name basic types of planar transmission lines. Explain the construction and field pattern for microstripline. (10 Marks)
- 7 a. What is radar? With a neat block diagram, explain the operation of radar. (10 Marks)
b. Derive the radar range equation starting from the power density of isotropic antenna. List the applications of radar. (10 Marks)
- 8 a. Explain single delay line canceller and frequency response of the single delay line canceller. (10 Marks)
b. With a neat block diagram, explain the operation of MTI Doppler signal processor. (10 Marks)

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Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.
2. Any revealing of identification, appeal to evaluator and /or equations written eg, 42+8 = 50, will be treated as malpractice.

