

Time: 3 Hours

Marks: 80

2/6/25

Note:

1. Question No.1 is compulsory.
2. Attempt any three from the remaining questions.
3. Assume suitable data if applicable.
4. Figures on the right hand side indicate full marks.

Q1: Solve any four

- a) Explain working principal of PIN diode 5
- b) Describe characteristics of E plane tee 5
- c) Compare Stripline and Microstrip line 5
- d) List the microwave frequency bands with frequency range and applications 5
- e) Explain pi mode oscillations in Magnetron 5

Q2: A) Design a single stub matching network using short circuited shunt stub to 10Match the terminating load  $Z_L = (200 + j300) \Omega$  to the characteristics impedance $Z_0 = 300 \Omega$ .B) A rectangular waveguide is filled by dielectric material of  $\epsilon_r = 9$  and has inside 10Dimensions of  $7 \times 3.5$  cm. It operates in dominant  $TE_{10}$  mode.

- i) Determine the cut-off frequency
- ii) Find the phase velocity in the guide at a frequency of 2 GHz
- iii) Find the guided wavelength at the same frequency

Q3: A) Explain characteristics of Magic Tee 10B) List various modes of oscillation of Gunn diode. Explain working of any One mode. 10Q4: A) What are ferrite devices? Explain any two in detail. 10B) Explain method to measure low and high VSWR at microwave frequency. 10