PVP 12

Code: **ECMC2T3**

I M.Tech-II Semester–Regular/Supplementary Examinations – July 2017

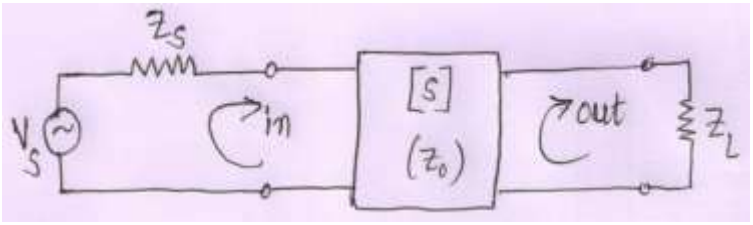
MICROWAVE NETWORKS AND MEASUREMENTS
(MICROWAVE & COMMUNICATION ENGINEERING)

Duration: 3 hours Max Marks: 70

Answer any FIVE questions. All questions carry equal marks

1. a) Show that the admittance matrix of a lossless N-port network has purely imaginary elements. 7 M

   b) Derive the expression for Γ_{in} for the terminated two-port network shown in fig. Using signal flow graphs. 7 M



2. a) The scattering parameters of a certain two-port network were measured to be 8 M

   $S_{11} = 0.3 + j0.7$ $S_{12} = S_{21} = j0.6$ $S_{22} = 0.3 – j0.7$

   Find the equivalent impedance parameters for this network, if the characteristics impedance is 50Ω.

   b) Explain how impedance will be matched using Double-stub tuner? 6 M

3. a) Explain the working of Bethe hole directional coupler. 7 M

   b) Explain about the construction and operation of magic tee with neat diagram and calculate the s-matrix of magic tee. 7 M

4. a) Discuss in detail about attenuators. 7 M

   b) Write about excitation of waveguides –electric and magnetic currents. 7 M

5. a) Derive the Q for the TM_{111} mode of a rectangular cavity. Assuming lossy conducting walls and lossless dielectric. 7 M

   b) Explain filter design by the image parameter method. 7 M

6. a) Explain an analysis of Infinite periodic structure. 8 M

   b) What is Brillouin Diagram? What is the need of K-β diagram? 6 M

7. a) Explain bolometer method to measure power. 7 M

   b) How to measure dielectric properties of materials at microwave frequencies? 7 M

8. a) Explain the working of spectrum analyzer. 7 M

b) Explain about the elements of network analyzer using block diagram. 7 M