Date-14/11/2019

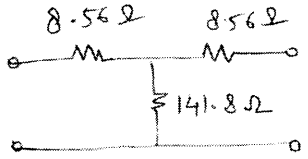
B.E.(EXTC) (Sem-VII) (CBS)

Time : 3 Hrs **Marks : 80**

Note:

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

1. a) Design Circulator using Magic Tee. **(05)**
   b) Explain Amplification Process in TWT. **(05)**
   c) Compare Isolator and Gyrator. **(05)**
   d) Calculate S parameters for 3dB Attenuator. Assume Zo = 50 Ω **(05)**



2. a) Explain the significance of RWH theory and explain two valley models in GUNN diode. **(10)**
   b) What is the importance of beam coupling coefficient? Derive the expression for velocity modulation in two cavity klystron. **(10)**

3. a) Derive the expression for various parameters that describe the wave propagation in TE/TM mode in Rectangular Waveguide **(10)**
   b) Explain Impedance measurement Technique in microwave. **(10)**

4. a) Design a two lumped element matching network at frequency 500 MHz frequency to match Z_L =200-j100 ohms with a transmission line of Zo=100 ohms using Smith Chart. **(10)**
   b) Draw and explain two-hole directional coupler and derive the S-parameter for the same. **(10)**

5. a) Design two single stub matching network (shunt- short) for a given load of 60-j80 ohms to match with a 50 ohms transmission line using Smith Chart. **(10)**
   b) Compare HMICs and MMICs with suitable diagram. **(10)**

6. Write short note on ***any two*** **(20)**
   a) Magnetron
   b) Transit time diodes
   c) HEMT

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