Total No. of Questions :8] *[Total No. of Printed Pages :2*

Roll No .....

EC-8012

B.E. VIII Semester

Examination, June 2017

Microwave Circuits

(Elective - II)

Time : Three Hours

Maximum Marks : 70

Note: i) Attempt any five questions.
ii) All questions carry equal marks.
iii) Assume suitable data if any missing. Answer must be to the point.

1. Design a single section quarter wave matching transformer to match 350 ohms load to a 100 ohms line. What is the percentage of bandwidth of this transformer for SWR ≤ 2 ?

2. Design an exponentially tapered matching transformer to match a 100 ohms line to a 50 ohms line.

3. A microstrip line is built on a substrate with a dielectric constant of 10. The substrate thickness is 0.025 inch. Calculate the line width for impedance 50 ohms.

4. Design a stripline transmission line for 100 ohms characteristic impedance. The ground plane separation is 0.316 cm and the dielectric constant of the filling material is 2.20. What is the guided wavelength on this transmission line if the frequency is 4.0GHz.

5. Derive the necessary and sufficient conditions for absolute stability of a microwave amplifier.

6. Write the procedure to design a low noise amplifier.

7. Draw the circuit of a differential FET mixer and explain its working.

8. Answer any four of the following:
   a) Why do we require stub matching?
   b) Discuss dispersion in microstrip line.
   c) What do you mean by stability of a transistor?
   d) Draw the circuit of a diode mixer.
   e) Define power loss ratio.
   f) Draw the frequency response of low pass maximally flat filter.

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