Roll No .....

EC - 8012

B.E. VIII Semeste

Examination, June 20 5

Microwave Circuits

Elective - II

Time : Three Hours

Maximum Marks : 70

Note: i) Attempt any one question from each unit.
ii) All question carry equal marks.
iii) Assume suitable data if any missing.

UNIT-I

1. a) What is the significance of impedance matching? Explain impedance match factor in brief. 7
   b) Explain (i) single stub matching (ii) Double stub matching. Enumerate the advantages and disadvantages of each of these methods. 7

OR

2. a) Write a detail note on Binomial transformer. 7
   b) A typical transmission line has a resistance of 8Ω /*Km* impedance of 2 *mh/km*, a capacitance of 0.002 $\mu F/\mu m$ and a conductance of $0.07 \mu s/km$. Calculate the characteristic impedance, attenuation constant, phase constant of transmission line at a frequency of 2 *kHz*. If a signal 82 volt is applied and the line is terminated by its characteristic impedance, calculate the power delivered to the load, if the length of line is 500 *km*. 7

UNIT-II

3. a) What are the different substrates available for microwave printed circuits? Explain in detail. 7
   b) Discuss various types of losses in microstrip lines and also define Quality factor of microstrip line. 7

OR

4. a) What do you understand by co -planer strip lines? 7
   b) A lossless parallel strip line has a conducting strip width *W. The* substrate dielectric separating the two strips has relative dielectric constant ε_{rd} of 6 and thickness d of $4mm$. Calculate, width W of strip in order to have characteristic impedance of 50Ω, strip line capacitance, strip line inductance and phase velocity of the wave in parallel strip. 7

UNIT-III

5. a) Discuss design procedure of low noise Amplifier. 7
   b) Explain microwave amplifier design using 'S' parameters. 7

OR

6. Explain in detail: 14
   a) Power gains
   b) Stability

UNIT-IV

7. Explain the following: 14
   a) Gunn oscillator
   b) Balanced mixer

OR

8. a) What do you understand by Oscillators phase noise? 7
   b) Explain mixer analysis using Harmonic Balancing. 7

UNIT-V

9. a) Explain the implementation of stepped impedance low pass filter. 7
   b) What do you understand by frequency transformation and expansion? 7

OR

10. a) Write a note on Narrowband and Wideband microwave filter. 7
    b) Discuss image parameter method of filter design in brief. 7

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