Code No. : 5138/O

FACULTY OF ENGINEERING
B.E. 2/4 (ECE) II Semester (Old) Examination, May/June 2012
NETWORKS AND TRANSMISSION LINES

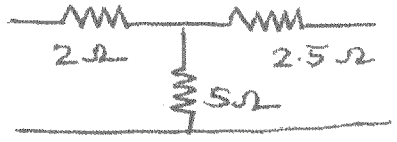
Time : 3 Hours] [Max. Marks : 75

***Note** : Answer **all** questions from Part **A**. Answer **any five** questions from Part **B**.*

PART – A **(25 Marks)**

1. Define the 'h' parameters of a two port network. **2**

2. Find the equivalent Π-network for the given T-network. **3**



3. Define the reciprocity theorem. **2**

4. Define the characteristic impedance of a transmission line. **2**

5. A lossless transmission line with a characteristic impedance of 400 Ω is terminated in a resistive load of 200 Ω. Determine the percentage of reflected power. **3**

6. Specify the reflection coefficient and SWR values for the following loads
   a) Short circuit b) Open circuit c) Matched load **3**

7. What are the characteristics of a quarter wave transmission line ? **2**

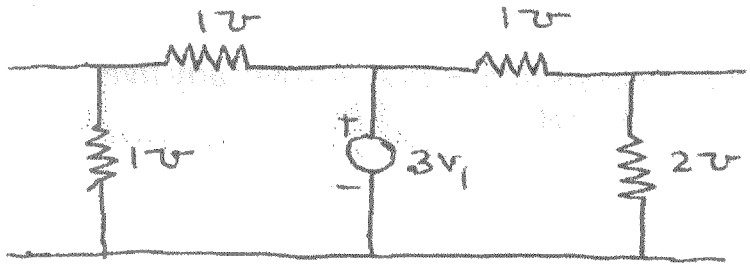
8. Determine the 'L' and 'C' values of a constant K low pass filter with a cutoff frequency of 2 kHz to be terminated in a resistive load of 600 Ω. **3**

9. Why composite filter is terminated in m derived half section ? Explain. **2**

10. Given the normalized impedance as (r + j x), how do you determine the normalized admittance using Smith Chart. **3**

PART – B (50 Marks)

11. Define the 'y' parameters of a two port network. Determine 'y' parameters for the network shown below. 10



12. Draw the equivalent circuit of a transmission line and derive expressions for the characteristic impedance and propagation constant in terms of the primary constants of the line. 10

13. a) What is an attenuator ? Derive the necessary equations for the design of a symmetrical Π attenuator. 5

    b) Design a symmetrical Π attenuator to provide a design impedance of 400 Ω and an attenuation of 20 dB. 5

14. What is a composite filter ? What are the various sections of a composite filter and briefly explain the importance of each Section. 10

15. A load $Z_L = (100 - j\,50)\,\Omega$ is connected to a transmission line whose characteristic impedance is 50 Ω . Using Smith Chart calculate the point nearest to the load at which a quarter wave transformer may be inserted to provide correct matching. Also determine the characteristic impedance of the quarter wave transformer that provides correct matching. 10

16. Define the image and iterative impedances of a network. Derive expressions for the image and iterative impedances for asymmetrical T-network. 10

17. Write short notes on the following : 10

    a) Double stub matching

    b) Notch filter.