

FACULTY OF ENGINEERING

B.E. 2/4 (ECE) II Sem.(Main) Examination, May/June 2011

Networks & Transmission Lines

Time : 3 Hours]

[Max. Marks : 75

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

PART - A

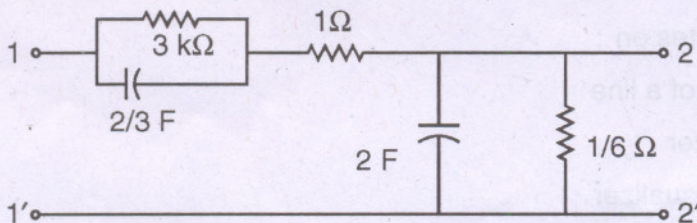
(25 Marks)

1. Show that for any two port bilateral network $AD-BC = 1$. 3
2. Define z-parameters of a typical four terminal network. 2
3. How the value of m is decided in m-derived filters ? Explain. 3
4. What is reflection coefficient and VSWR for a matched load ? 2
5. Design symmetrical T attenuator for $R_0 = 600 \Omega$ & $\alpha = 20$ dB. 3
6. What are the limitations of constant K filters ? 2
7. Why short circuit stubs are preferred over open circuit stubs ? 2
8. Show that $\lambda/4$ transformer acts as like impedance inverter. 3
9. What are the special features of the telephone cable ? 2
10. On a transmission line terminated in a load VSWR is measured as '2'.
What % of power will be reflected back ? 3

PART - B

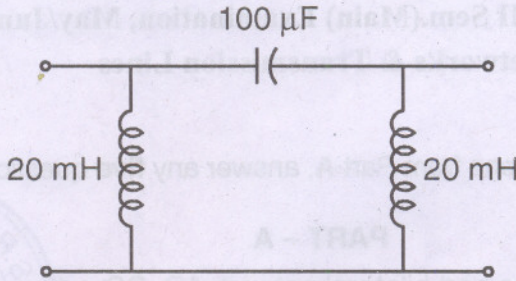
(50 Marks)

11. (a) For a two port network shown in fig. (1) calculate the value of Y_{12} . 7



- (b) Verify whether network of fig. (1) is reciprocal or not. 3

12. (a) Design L- type matching section to match 50Ω to 400Ω . 6
 (b) Find characteristic impedance of the π section shown. 4



13. Design composite T section low pass filter with the specifications given
 $R_o = 600 \Omega$ $F_c = 1000 \text{ kHz}$ $f_\infty = 1200 \text{ kHz}$. 10

14. (a) Differentiate between various methods of network synthesis. 4
 (b) Synthesize the given real impedance function in callor forms : 6

$$z(s) = \frac{(s+1)(s+2)}{(s+3)}$$

15. (a) Show that for a short circuit line of length 'l' with propagation constant β , input impedance is $Z_{sc} = jz_o \tan \beta l$. where z_o is characteristic impedance. 6
 (b) Derive relationship between VSWR and reflection co-efficient. 4

16. (a) Transmission line of 50Ω , length 0.2λ is terminated in $(100 + j200)\Omega$ load. Find input impedance using Smith chart. What is VSWR on line? 5
 (b) Give design equations and steps for single stub matching using Smith chart. 5

17. Write short notes on : 10
 (a) Loading of a line
 (b) Notch filter
 (c) Phase Equalizer