Code No. : 3279

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

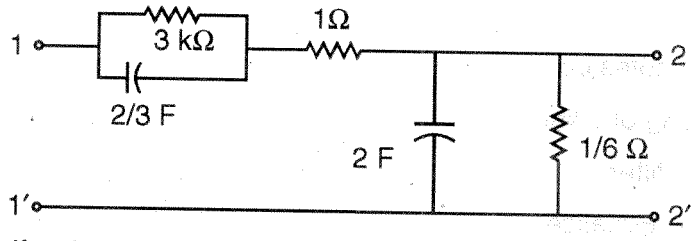
8. Show that $\lambda/4$ transformer acts as like impedance inverter. 3

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)

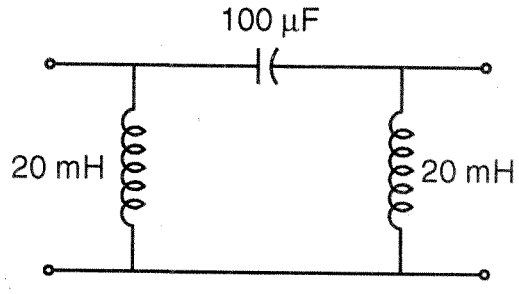
11. (a) For a two port network shown in fig. (1) calculate the value of Y_{12}. 7



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

12. (a) Design L- type matching section to match 50 Ω to 400 Ω. 6

(b) Find characteristic impedance of the π section shown. 4



13. Design composite T section low pass filter with the specifications given

$R_0 = 600\ \Omega$ F_c=1000 kHz f_∞= 1200 kHz . 10

14. (a) Differentiate between various methods of network synthesis. 4

(b) Synthesize the given real impedance function in caller 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 $Z_{sc} = jz_0 \tan\beta l$. where z_0 is characteristic impedance. 6

(b) Derive relationship between VSWR and reflection co-efficient. 4

16. (a) Transmission line of 50 Ω, length 0.2 λ is terminated in (100 + j200)Ω 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
