Code No.: 3264

FACULTY OF ENGINEERING

B.E. II/IV Year (E & EE) II Semester (Main) Examination, May/June 2011

ELECTRICAL CIRCUITS - II

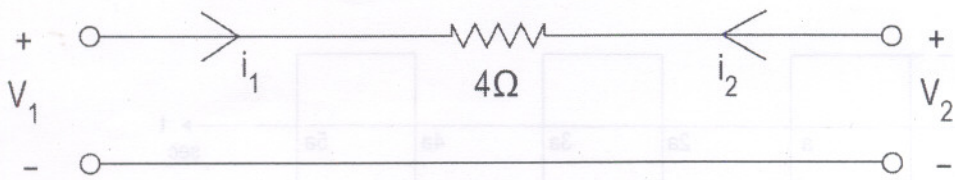
Time : 3 Hours] [Max. Marks : 75

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

Part A – (Marks: 25)

1. Find the range of values 'a' in P(s). So that $P(s) = 2s^4 + s^3 + as^2 + s + 2$ is Hurwitz. 3

2. Find the Y-parameters of the following network. 3

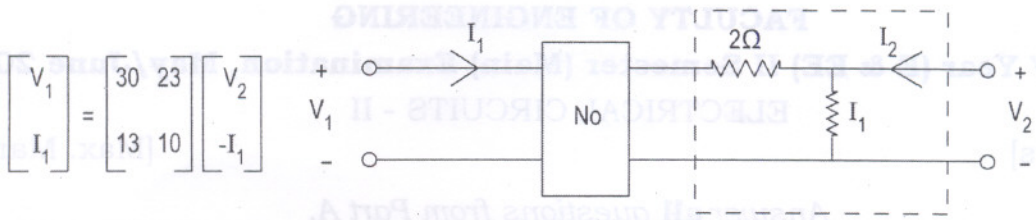


3. Define the term 'Symmetry'. 2
4. Define 'Band width' and its importance. 2
5. State and prove Final value theorem. 3
6. Express T - parameters in terms of h - parameters. 2
7. Define the term "Network Synthesis"? 2
8. Obtain the Laplace Transform of "t cos at". 3
9. List the properties of Positive-Real function. 2
10. Explain the effect of addition of zero at infinity in the transfer function and also explain how it effects the actual circuit. 3

Part B – (Marks: 50)

11. Show that, when two 2-port networks N_1 and N_2 are connected in cascade the equivalent ABCD parameters of the combined network is the product of ABCD parameters of each, individual 2 port Network. 10

12. In the arrangement of figure given below.

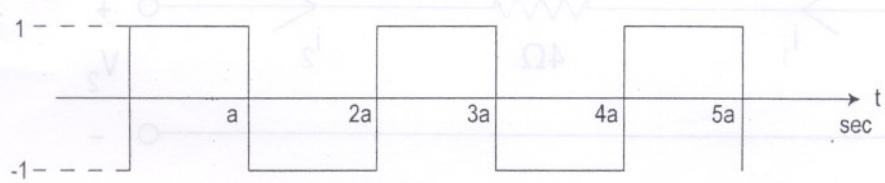


Find the transmission parameters of No? 10

13. The Fourier Transform of a continuous time signal f(t) is given by

$F(w) = \frac{10}{j\omega + 4}$. Determine the Fourier transform Y(w) if Y(t) = f(t) cos 2t. 10

14. (a) Find the Laplace transform of the following rectangular wave form. 6



(b) Obtain the Laplace transform of $e^{-t}(1+\cos 2t)$. 4

15. The driving point impedance of an LC network is given by Z(s) =

$$z(s) = \frac{10(s^r + 4)(s^r + 16)}{s(s^r + 9)}$$

Obtain the first form of Foster network. 10

16. Check whether the following functions is Hurwitz or not. 10

(a) $P(s) = S^4 + S^3 + 3S^2 + 2S + 2$.

(b) $Q(s) = S^7 + 2S^6 + 2S^5 + S^4 + 4S^3 + 8S^2 + 8S + 4$.

17. Given the driving point impedance function

$$z(s) = \frac{s(s^r + 2)}{(s^r + 1)(s^r + 4)}$$

Synthesize a ladder network of the first cauer form and second cauer form for this impedance function. 10