

4E4172

Roll No. _____

Total No of Pages: **7**

4E4172

B. Tech. IV Sem. (Main/Back) Exam., June/July-2014

Electrical Engg.

4EE2A Circuit Analysis-II

Time: 3 Hours

Maximum Marks: 80

Min. Passing Marks: 24

Instructions to Candidates:-

Attempt any five questions, selecting one question from each unit. All Questions carry equal marks. Schematic diagrams must be shown wherever necessary. Any data you feel missing suitably be assumed and stated clearly.

Units of quantities used/ calculated must be stated clearly.

Use of following supporting material is permitted during examination.

(Mentioned in form No. 205)

1. _____ NIL _____

2. _____ NIL _____

UNIT – I

Q.1. (a) Illustrate the importance and advantage of complex frequency. [8]

(b) Determine equivalent capacitance across terminal (a-b) in Fig. 1. Also find the charging time to charge these capacitances by a steady direct current of constant magnitude of 10A. [8]

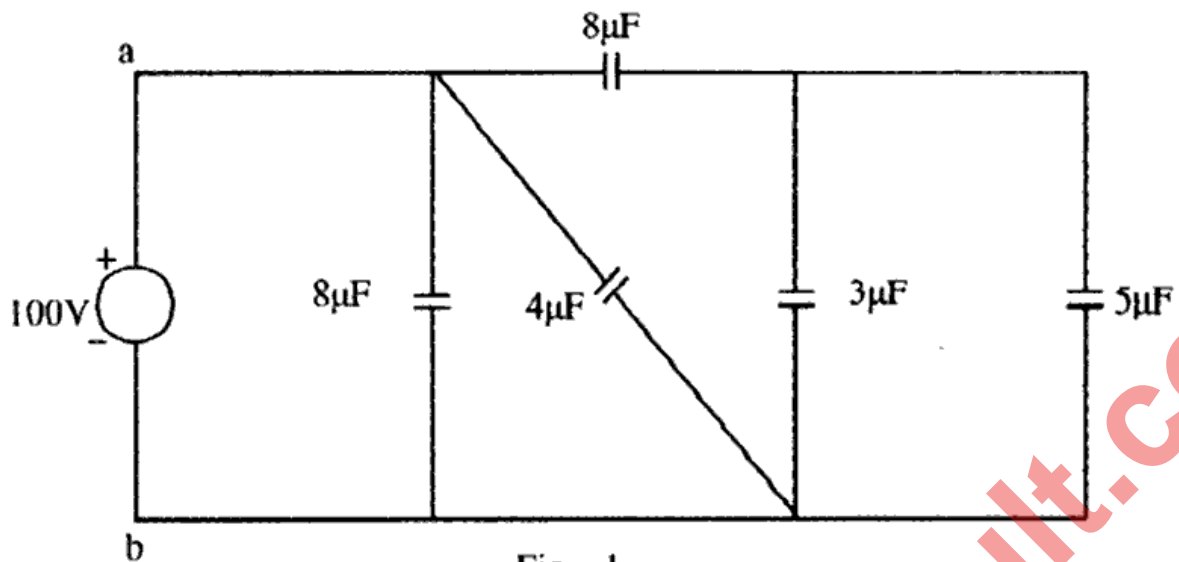


Fig. -1

OR

Q.1. (a) Differentiate between transform impedance and admittance of a network. [8]

(b) Find the equivalent resistance across x-y of the circuit shown in fig. 2. [8]

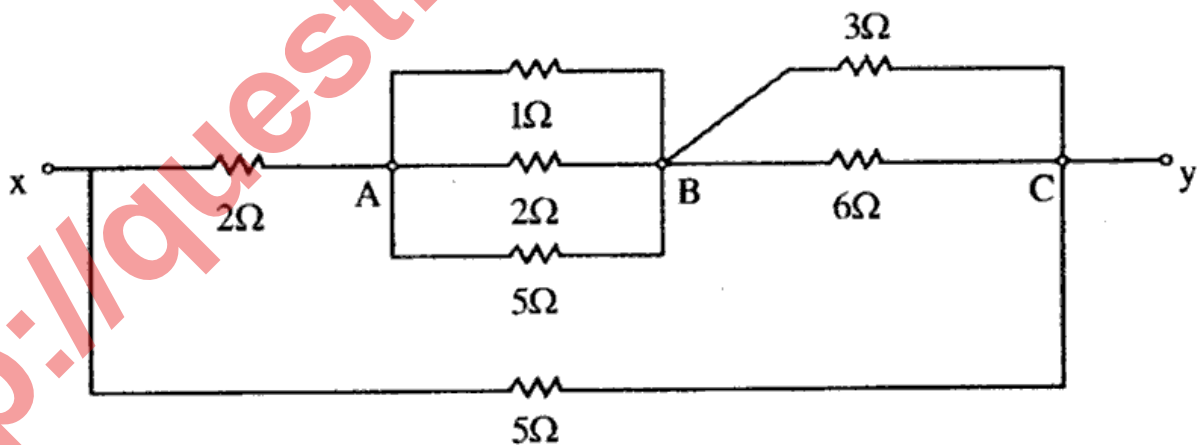


Fig. -2

UNIT – II

Q.2. (a) Find $Z_{11}(S)$, $Z_{21}(S)$ in the following circuit shown in fig. 3.

[6]

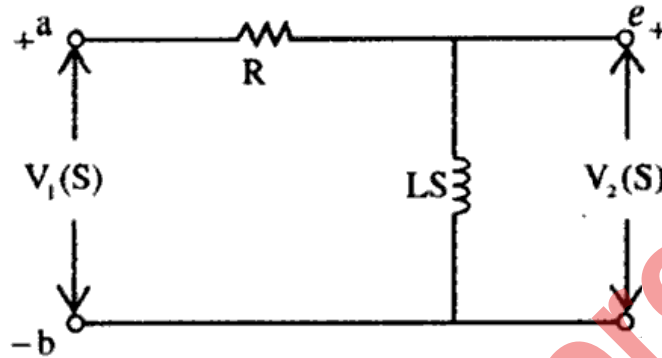


Fig. -3

(b) Find the pole zero locations of the current transfer ratio I_2/I_1 in S-domain for circuit shown in fig. 4.

[10]

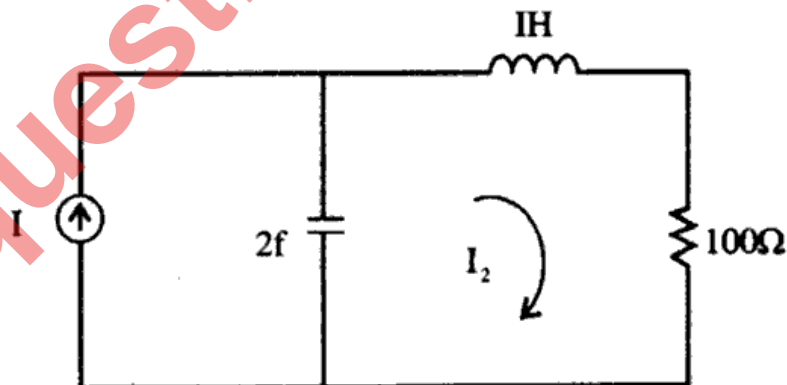


Fig. -4

OR

- Q.2. (a) Obtain the pole zero diagram of the given function and obtain time domain response. [10]

$$I(S) = \frac{2S}{(S+1)(S^2+2S+4)}$$

- (b) Find the transfer function of network shown in fig. 5 [6]

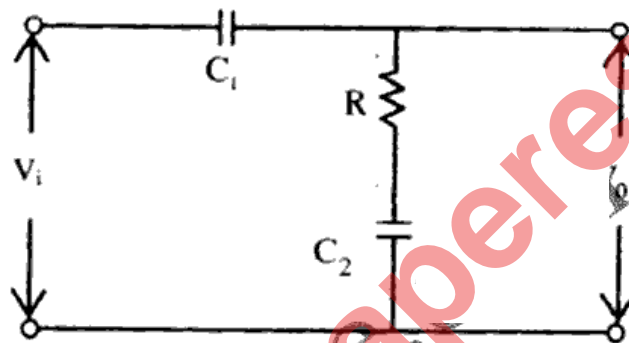


Fig. - 5

UNIT - III

- Q.3. (a) Test whether the polynomial $S^5 + S^3 + S$ is Hurwitz or not. [6]

- (b) A driving point impedance is given by $Z_{LC}(S) = \frac{S(S^2+4)(S^2+6)}{(S^2+1)(S^2+5)}$ Obtain the first form of caver network. [10]

OR

Q.3. An impedance is given by $Z(S) = \frac{8(S^2 + 1)(S^2 + 3)}{(S^2 + 2)(S^2 + 4)}$

Realise the network in Foster – I, II and Caver – I, II form.

[16]

UNIT – IV

Q.4. (a) Determine the Z-parameters for a π - type attenuator section (fig. 6)

[8]

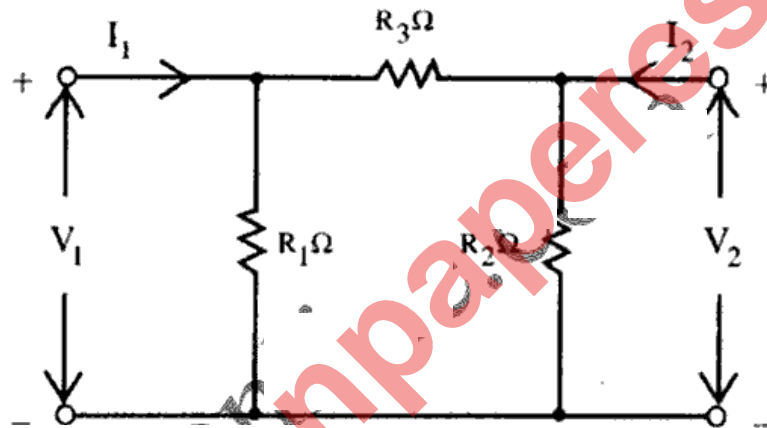


Fig. – 6

(b) Find out ABCD parameters of network shown in fig.7. Also find image parameter of network.

[8]

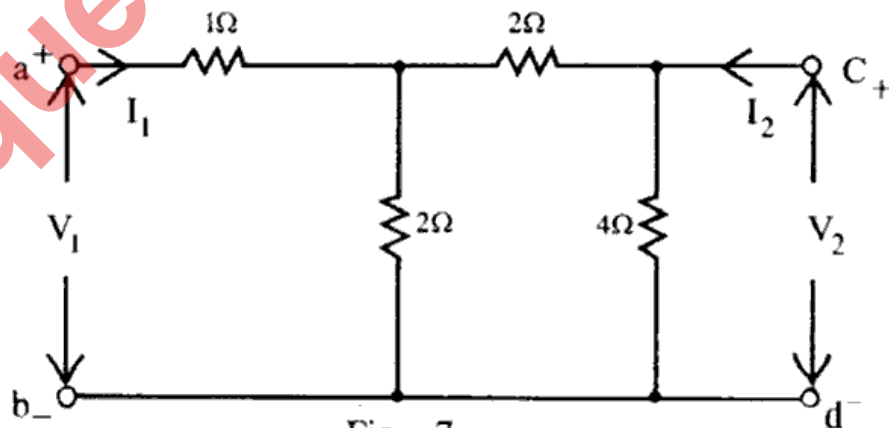


Fig. – 7

OR

- Q.4. (a) Two networks have been shown in fig. 8. Obtain the transmission parameters of resulting circuit when both circuits are in cascade. [10]

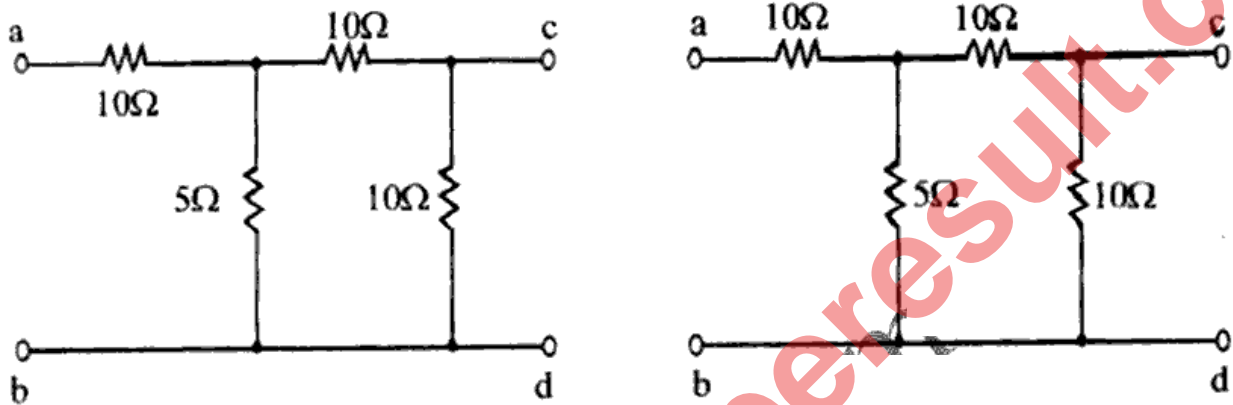


Fig.-8

- (b) How Z- parameters are represented in two port network analysis. [6]

UNIT-V

- Q.5. (a) Illustrate Barlett's bisection theorem with suitable example. [6]
- (b) Design an m-derived high pass filter having a design impedance of 600Ω , cut off frequency of 5 kHz and $m = 0.35$. Also determine the frequency of infinite attenuation. [10]

OR

Q.5. (a) Design a low pass composite filter to operate with a design impedance 500Ω ,
 $m = 0.2$ and cut off frequency = 2000Hz [8]

(b) Write short note on importance of active filters in circuit analysis. [8]
