

Reg. No. :

Name :

**Third Semester B.Tech. Degree (Reg./Sup./Imp. – Including Part time)
Examination, November 2015
(2007 Admn. Onwards)**

PT 2K6/2K6EC/AEI 305 : NETWORK THEORY

Time : 3 Hours

Max. Marks : 100

Instructions: Answer all questions.

Assume missing data.

- I. a) Check whether the circuit given below satisfies Reciprocity Theorem. 5

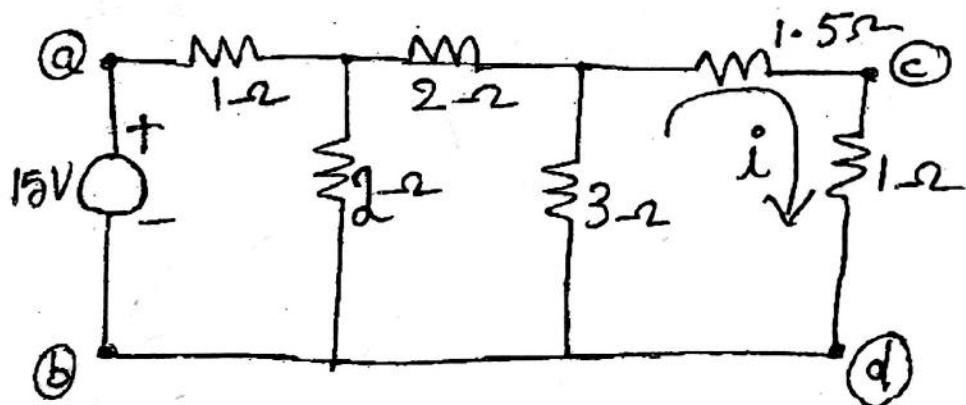


Fig. I-a

- b) Obtain the step response of a second order system. 5
c) Find the Laplace Transform of the wave form given below : 5

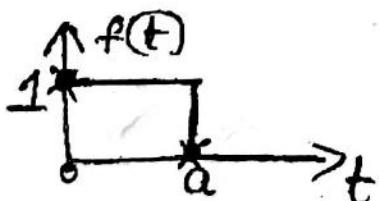


Fig I-c

- d) What are the significance of poles and zeros ? 5



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- e) For the network given below find the transfer function $Z_{21}(S)$ and $Z_{11}(S)$.

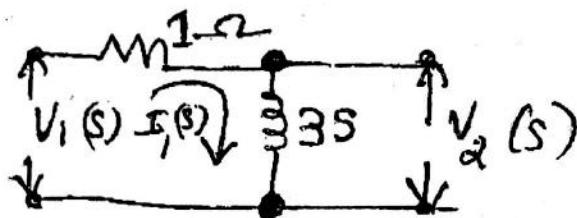


Fig. I-e

- f) Compare the features of m derived filters with prototype filter.

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- g) For the function given below, obtain the Cauer's First form

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

- h) Explain the different types of frequency response, on the basis of location of poles and zeros.

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(8x5=40)

- II. a) Find the Norton's equivalent circuit for the circuit shown below.

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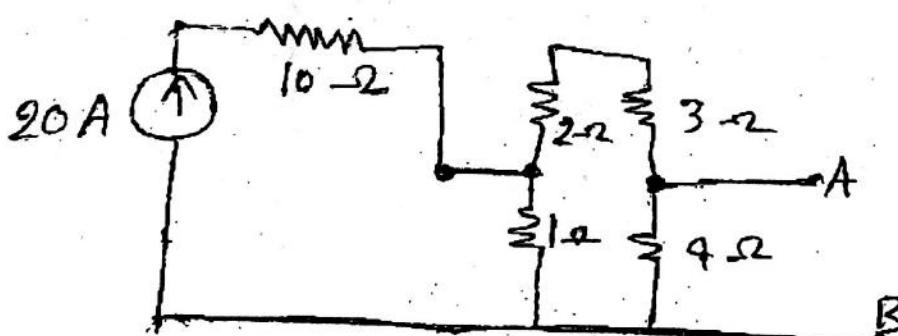


Fig II. a

OR

- b) Obtain the response of a second order RL circuit to sinusoidal input.

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- III. a) In the network given below determine V_a and V_b .

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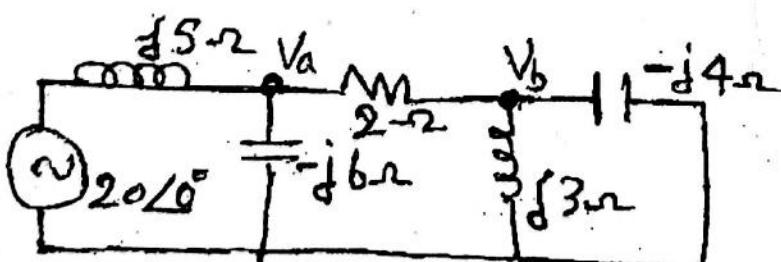


Fig. III. a

OR

- b) Explain five properties of transfer functions with necessary examples.

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IV. a) Obtain the Z and Y parameters of the circuits shown below.

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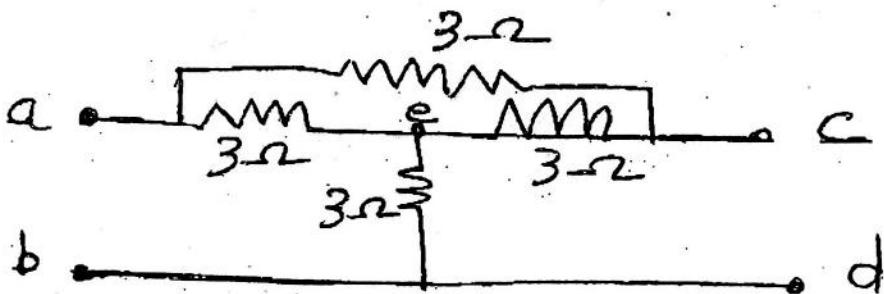


Fig. IV. a

OR

- b) Design a T section and π section constant – K HPF, with cut off frequency 10KHZ, design impedance (R_o) 300Ω . Also find out the characteristic impedance (Z_o) and phase constant (β) in the passband (12KH_z) and stopband (5KH_z).

V. a) Find the first and second Caur forms of the given function.

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$$Z(s) = \frac{(s+2)(s+5)}{s(s+9)}$$

OR

- b) What is Brune's positive real function ? Explain the properties of positive real functions.

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