[Total No. of Printed Pages:3] **CODE NO:- Z-394**

FACULTY OF ENGINEERING & TECHNOLOGY

S.E(EEP/EE/EEE)Year Examination June– 2015

Network Analysis

(Revised)

[Time: Three *Hours*] **[Max. Marks: 80]**

"Please check whether you have got the right question paper."

i) Q.NO.1&6 are compulsory.

ii) Attempt any two questions from Q.No2 to 5 & Q.No7to 10.

iii) Assume suitable data if necessary.

SECTION A

Q.1 Attempt any five questions from the following 10

a) Define lumped & distributed network.

b) What is Dot convention for coupled circuit

c) State millman's theorem.

d) What are initial & final conditions for R, L&C.?

e) Find Laplace transformation of impulse & ramp function.

f) Find circuit flowing through 10Ω by using transformation ,fig.(1)

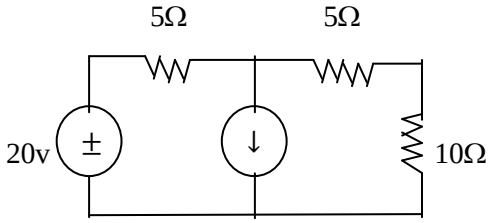


Fig.1

g) What TS convolution theorem?

h) Draw dual network for circuit shown in fig.(2)

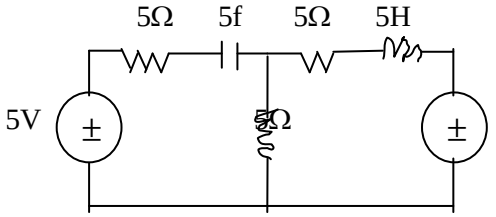


fig.2

Q.2 a) Using node analysis ,find the value of $\propto$ for the circuit shown in fig.(3)When the power loss in the 1Ω resistor is gw 07

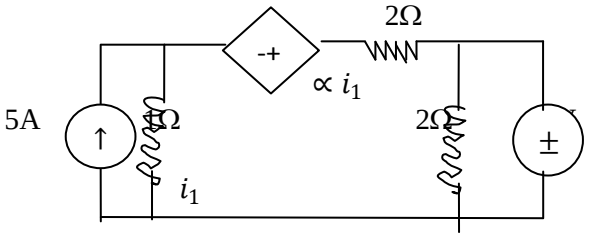


Fig.3

b) Using mesh analysis ,find the magnitude of the current dependent source and the current through the 2Ω resistor for the network shown in fig.(4) 08

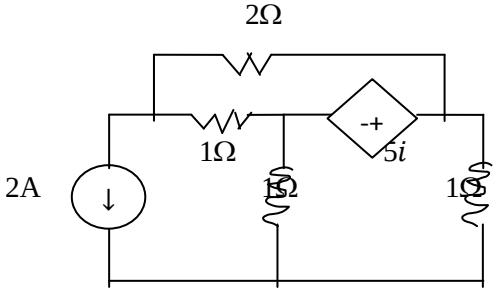


Fig.4

Q.3 a) State & Explain Reciprocity & substitution theorem. 08

b) Obtain Norton's equivalent network between terminals A&B for the Network shown in fig(5) 07

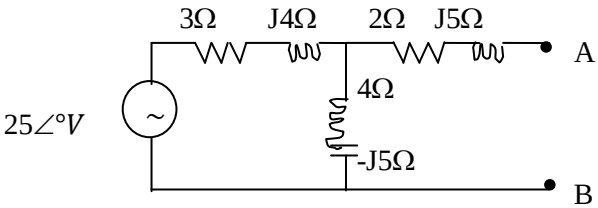


fig.5

Q.4 a) A function in Laplace domain is given by 07

Z(s)=$\frac{s+1}{s(s^2+4s+4)}$ Obtain its inverse form.

b) Derive the transient response in series R-L circuit with sinusoidal excitation by differential method. 08

Q.5 a) Find the impulse and step response of the voltage across the capacitor in the network shown in fig.(6) shown in fog.(6) 08

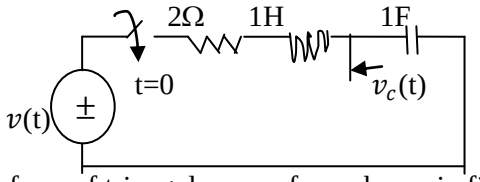


Fig.6

b) Obtain the Laplace transform of triangular waveform shown in fig (7). 07

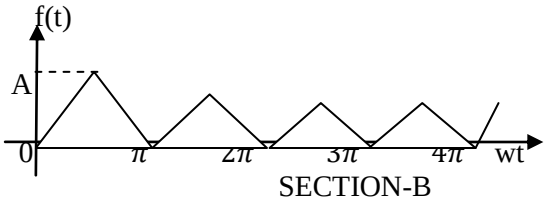


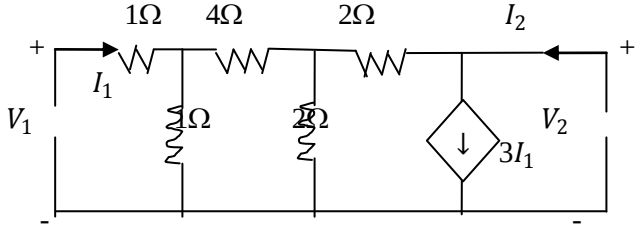
fig.7

SECTION-B

Q.6 Attempt <u>any five</u> questions from following 10

a) For transmission parameters prove that A= D
b) Define RMS value ,average value ,average power & complex power
c) Define Fourier coefficients, q_0, q_n & b_n.
d) Write q_n oppression for exponential form of Fourier series & define term 'c_n'.
e) Define driving point & transfer function.
f) What is the significance of poles & zeros
g) Draw ladder network showing series impedances & shunt admittances.
h) Define Z-parameters.

Q.7 a) Determine h-parameters & hence find out transmission parameters for the network shown in fig (8). 08



b) For the network shown in fig(9)show that insertion loss in decibels 07

$$\propto = 20log\frac{R_1}{R_2+R_1}\left(\frac{V_S}{V_2}\right)db.$$

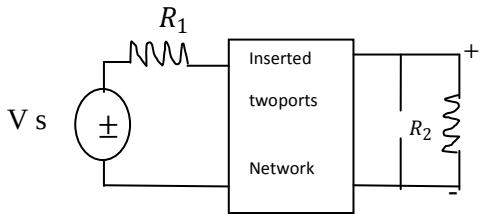


fig.2

Q.8 a) Write trigonometric form of Fourier of Fourier series, & Obtain the compact form of Fourier series. 07

b) Determine the Fourier series for the saw- tooth wave shown in fig (10).Draw amplitude & phase spectrum. 08

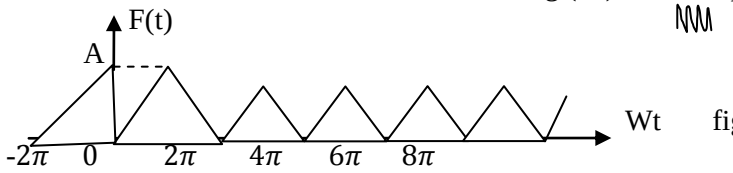


fig.10

Q.9 a) What are the restrictions on pole & Zero Location in transfer function? 07

b) Determine the voltage ratio $\frac{V_2}{V_1}$, current ratio $\frac{I_2}{I_1}$ for the network shown in fig(11). 08

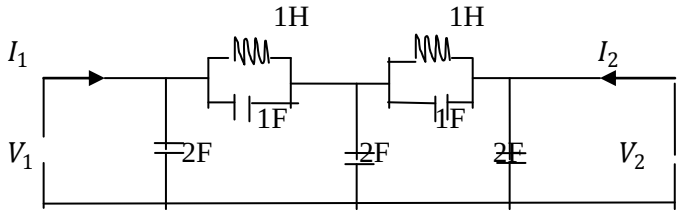


Fig.11

Q.10 Write short note on the following

a) Problem in optimizing power transfer from source to load. 05

b) Stability of active network. 05

c) Steady state response of the periodic signals. 05