Total No. of Questions – [8]   Total No. of Printed Pages 2

G.R. No.	

DECEMBER 2019/ENDSEM – 'Backlog Exam)

S. Y. B. TECH. (E&TC) (SEMESTER - I)

COURSE NAME: NETWORK THEORY

COURSE CODE: ETUA21176

(PATTERN 2017)

Time: [2 Hours]   [Max. Marks: 50]

(*) Instructions to candidates:
1) Answer Q.1, Q.2, Q.3, Q.4, Q.5 OR Q.6, Q.7 OR Q.8
2) Figures to the right indicate full marks.
3) Use of scientific calculator is allowed
4) Use suitable data wherever required

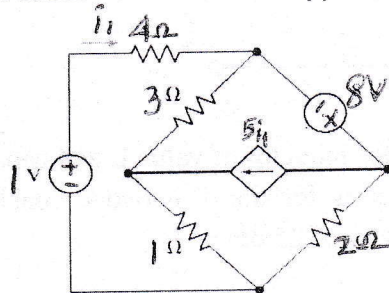Q.1 a) State and Describe Superposition theorem with help of suitable example.   [6]

OR

b) State and prove Nortons's theorem with the help of suitable example.   [6]

Q.2 a) State and prove Thevenin's theorem with the help of suitable example.   [6]

OR

b) Determine the current supplied by 1V source   [6]

Q.3 a) In a series resonant circuit, with inductor of 1H and coil resistance 10 ohms   [6]
and capacitor of 1nF, determine the resonant frequency. Also find the quality
factor

OR

b) Compare series and parallel resonance (any three points)   [6]

Q.4 a) In the following circuit the switch is moved from position 1 to 2 at t=0. Prior   [4]
to this the steady state was reached. Determine i(t) after switching.

Y2
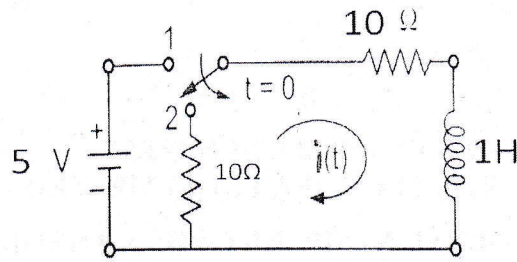
OR

b)   Determine Laplace transform for the following functions 1) cos (ωt) 2) 10   [4]

Q.5   a)   Describe the stepwise procedure to determine Z parameters and Y parameters [6] of the network.

     b)   Describe in details a) Input impedance b) transfer impedance   [4]

     c)   Determine Y11 and Y22 parameters for the T network consisting of each [4] series arm of 100 ohms and shunt arm of 100 ohm.

OR

Q.6   a)   Determine driving point impedance Zin for the following network   [6]
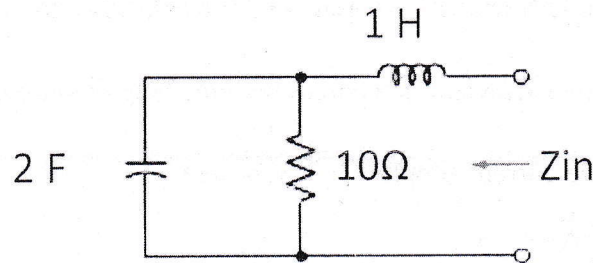
     b)   Give the 'S' domain equivalents for inductor of value L and capacitor C   [4]

     c)   Determine Z11 and Z22 parameters for the T network consisting of each [4] series arm of 25 ohms and shunt arm of 25 ohm.

Q.7   a)   Draw the circuit diagram of constant K HPF. Draw its frequency response/ [6] characteristics.

     b)   What is attenuation constant and phase constant.   [4]

     c)   Draw the characteristics curves for attenuation constant, phase constant and [4] characteristics impedance Z_{0T} for LPF.

OR

Q.8   a)   What are constant K filters? Draw the curve for attenuation and phase [6] constant of constant k LPF.

     b)   Draw the characteristics curves for attenuation constant, phase constant and [4] characteristics impedance Z_{0T} for HPF .

     c)   Define quality factor of the filter. How it affects the bandwidth of the filter?   [4]

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