

Total No. of Printed Pages:5

**SUBJECT CODE NO:- H-174**  
**FACULTY OF ENGINEERING AND TECHNOLOGY**  
**S.E. (EEP/EE/EEE)**  
**Network Analysis**  
**(REVISED)**

[Time: Three Hours]

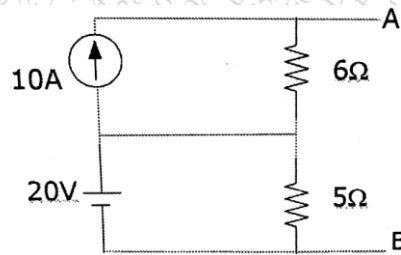
[Max.Marks: 80]

Please check whether you have got the right question paper.

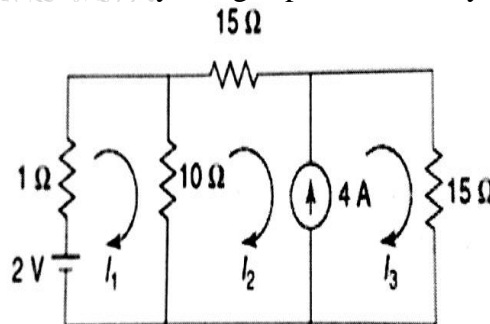
- N.B
1. Use & assume suitable data if required.
  2. Q.No.1 from section A & Q.No.6 Section B are compulsory.
  3. Solve any two questions from the remaining questions in each section A & B.

**Section A**

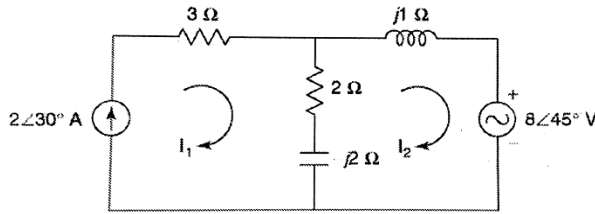
- Q.1 Solve any five: 10
- a) Define Mutual Inductance.
  - b) Define convolution integral.
  - c) Explain linear & nonlinear circuit elements.
  - d) State the Superposition's Theorem.
  - e) Replace the circuit into single current source and resistor.



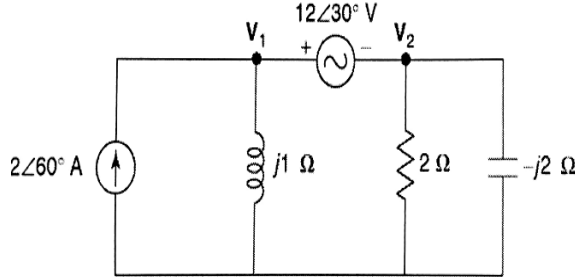
- f) Explain dependent & independent sources & their types.
  - g) Find Laplace transform of Unit ramp function.
  - h) Give the principal of Duality.
- Q.2 a) Find the current through 10Ω resistor by using super-mesh analysis. 05



b) Determine the voltage across  $2\Omega$  impedance. 05

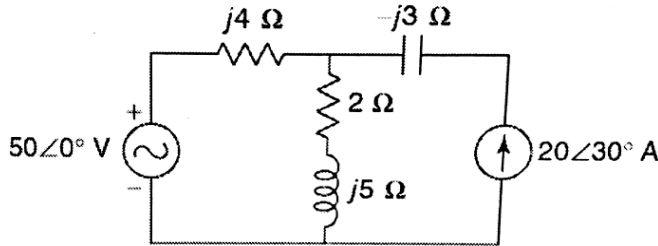


c) Find the voltage  $V_1$  &  $V_2$  in the circuit using nodal analysis. 05

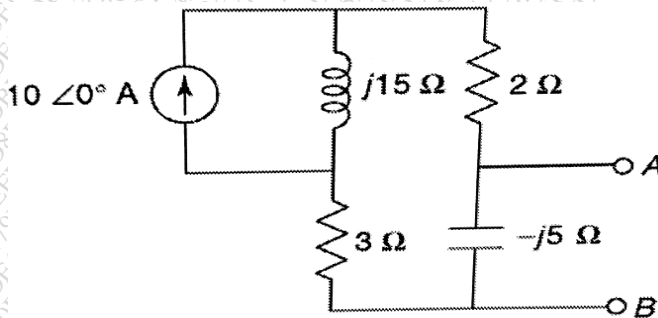


Q.3 a) State & explain Millman's Theorem in details along with example. 05

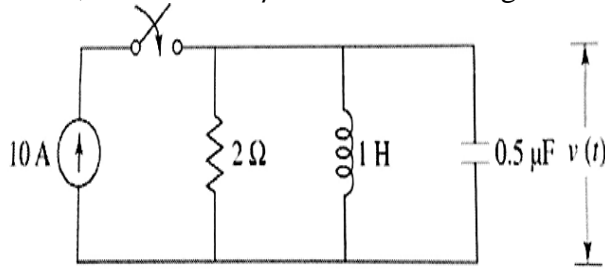
b) Determine the voltage across  $(2 + j5)\Omega$  impedance. 05



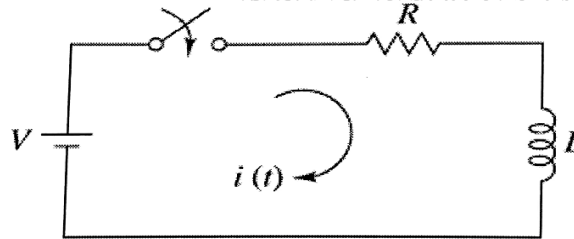
c) Obtain Thevenin's Equivalent circuit for terminal A & B. 05



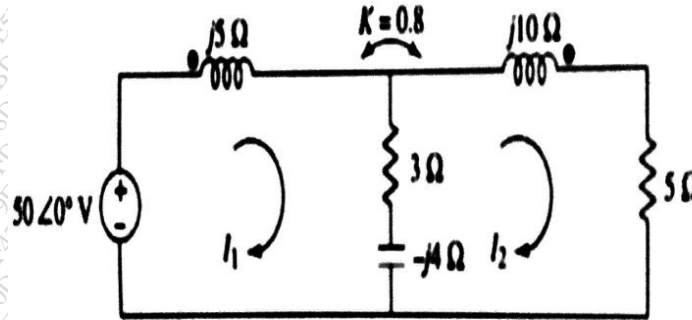
Q.4 a) Find  $v$ ,  $dv/dt$  &  $d^2v/dt^2$  for following circuit. 08



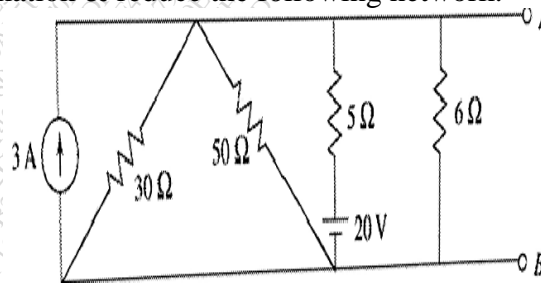
b) With help of Laplace transform find  $i(t)$  07



Q.5 a) Find the voltage across  $5\Omega$  resistor. 07



b) Explain Source transformation & reduce the following network. 04



c) Explain Source shifting in detail along with example. 04

Section B

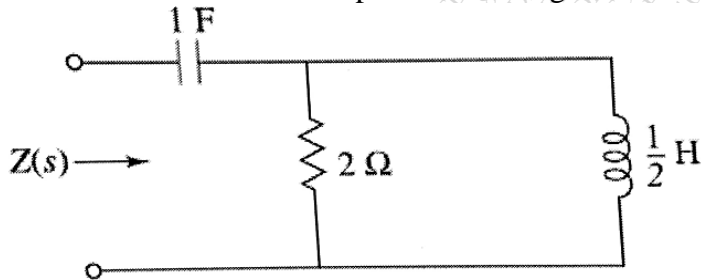
Q.6 Solve any five:

- Write application of Laplace transform.
- What is reactive power? Give its physical significance.
- Write open circuit impedance ( $Z$ ) parameters of two port network.
- Define Fourier coefficients.
- Write Transmission Parameters & their equations.
- What is reactive power? Give its physical significance.
- What is Fourier series & what are the application of Fourier transform.
- Explain restrictions on Pole and Zero Location for transfer functions.

10

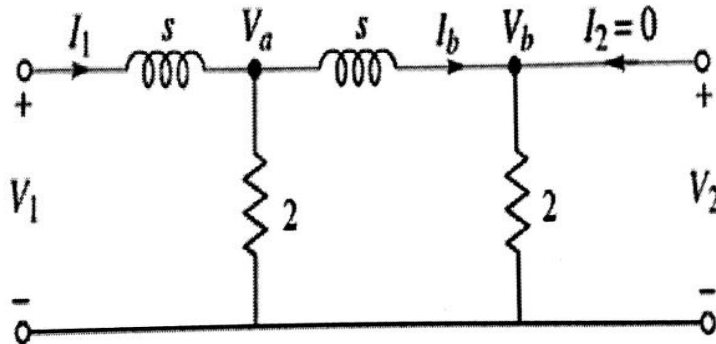
Q.7 a) Find Poles & Zeros of the impedance of the given network & plot them on s-plane.

08



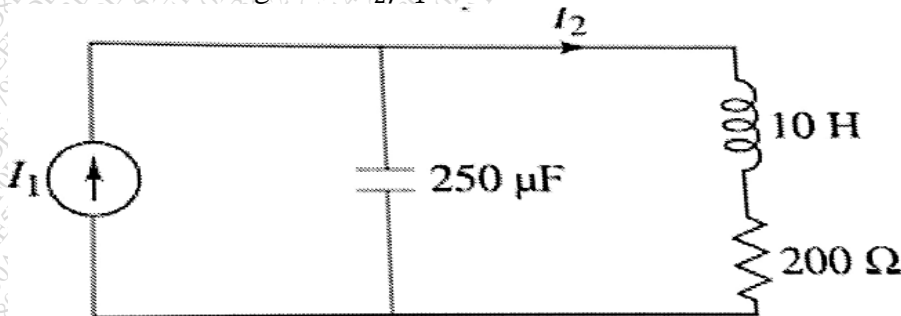
b) Determine Transfer Function  $V_2/V_1$

07



Q.8 a) Draw Pole zero diagram of  $I_2/I_1$ .

05



b) State the limitation on pole & zero location in transfer function of two port network.

05

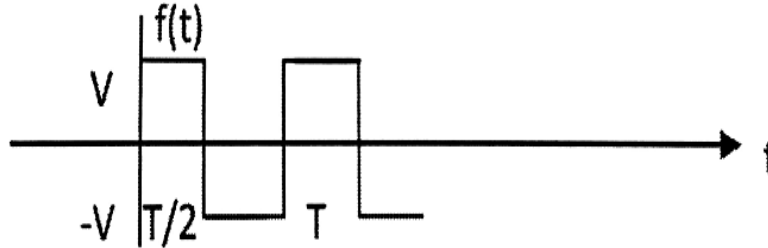
c) Explain Insertion Loss in detail

05

Q.9

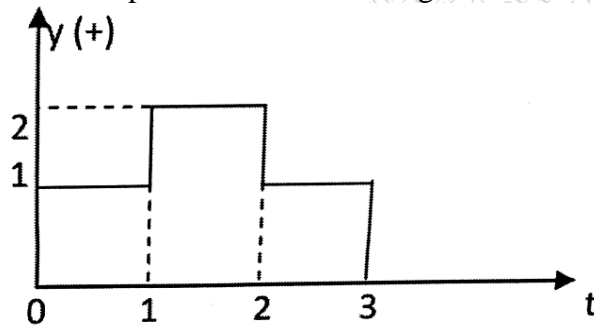
a) Find Fourier Coefficient of following waveform.

05



b) Find the Laplace transform of the given waveform.

05



c) Explain in brief concept of even and odd functions.

05

Q.10

a) Derive the concept of the reciprocity for z parameters.

08

b) Find the Fourier series for square wave defined as  $f(t) = +A$   $0 < t < T/2$   
 $= -A$   $T/2 < t < T$

07