



**VEERMATA JIJABAI TECHNOLOGICAL INSTITUTE**  
 [Central Technological Institute, Maharashtra State]  
 (Autonomous, affiliated to Mumbai University)  
 Matunga, Mumbai-400 019

End SEMESTER  
 EXAMINATION  
 SEMESTER & PROGRAM

May 2012

DATE OF EXAM. 18/05/2012

TIME ALLOWED  
 COURSE (Course Code) :

Sem.IV-  
 B.Tech.Electronics  
 3 HRS.  
 ENA (EC0208)

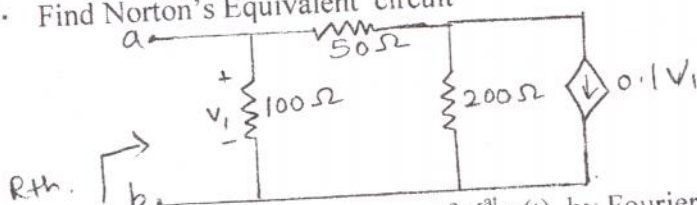
TIME 1:30 - 4:30 pm.

MARKS 100

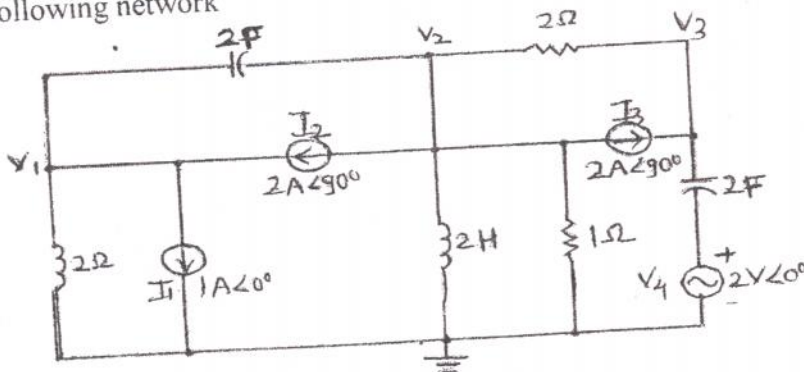
**Instructions:-**

- 1) Question 1 is compulsory.
- 2) All questions carry equal marks.
- 3) All sub-questions of a given question should be grouped & written together.
- 4) Attempt any four.

- Q.1. Solve any five
- a. Find the Fourier transform of  $\frac{dx(t)}{dt}$ , if  $F[x(t)]=X(w)$ . 04
  - b. Find the relation between A,B & Q Matrices. 04
  - c. Derive the conditions for reciprocity & symmetry for Transmission parameters 04
  - d. Find Norton's Equivalent circuit 04

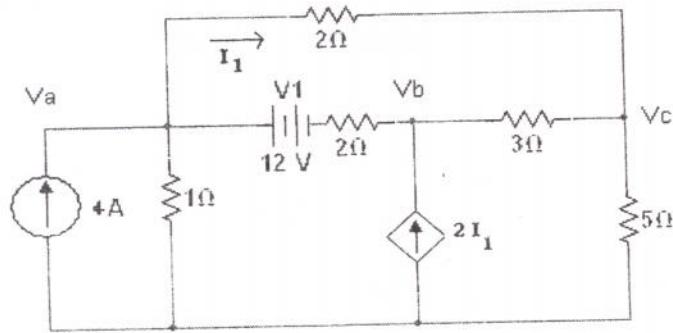


- e. Draw the frequency spectrum of  $e^{-at} u(t)$  by Fourier Transform 04
  - f. Derive Z-parameters in terms of hybrid parameters. 04
- Q.2. a. For the following circuit draw oriented graph and write i) Incidence matrix, ii) F - cutset matrix, iii) Tie set matrix. Also draw dual on following network 10



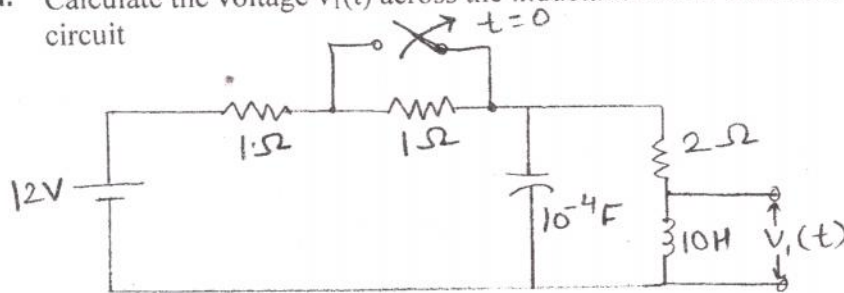
b. Find  $V_a$ ,  $V_b$ ,  $V_c$ .

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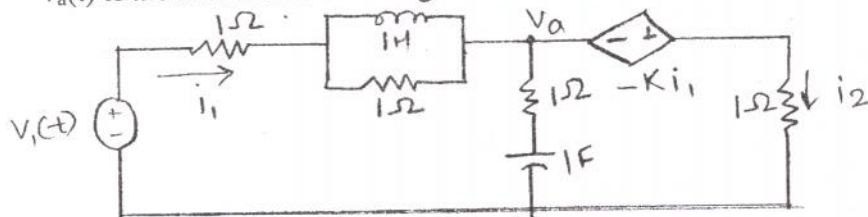
Q.3. a. Calculate the voltage  $v_1(t)$  across the inductance for  $t > 0$  in following circuit

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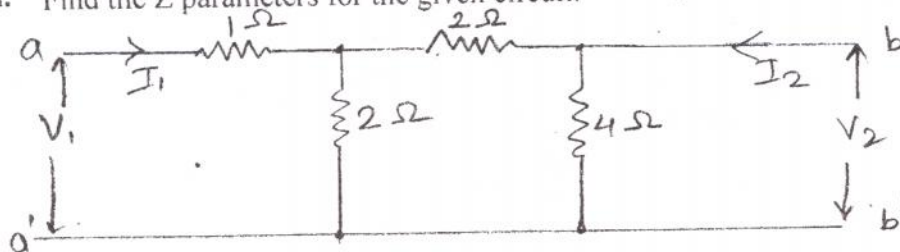
b. The network given below contains a current controlled voltage source. For the element values given and with  $v_1(t) = 5u(t)$ , determine  $v_a(t)$  if the network is not energized at  $t=0$ . Let  $K = -3$

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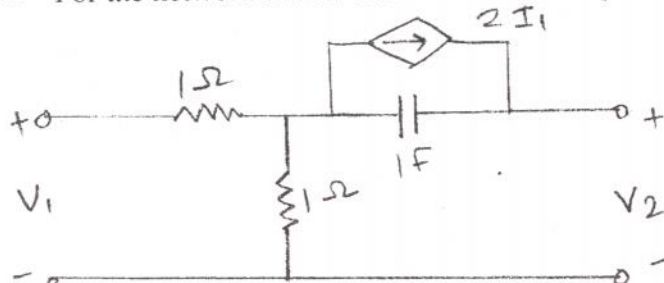
Q.4. a. Find the Z parameters for the given circuit.

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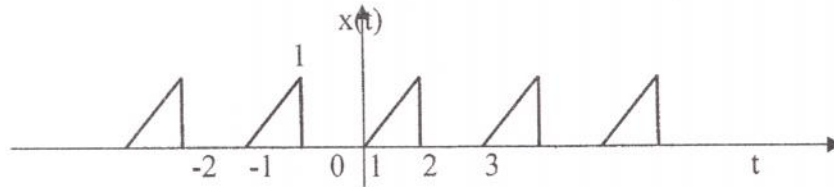


b. For the network shown below determine h parameters

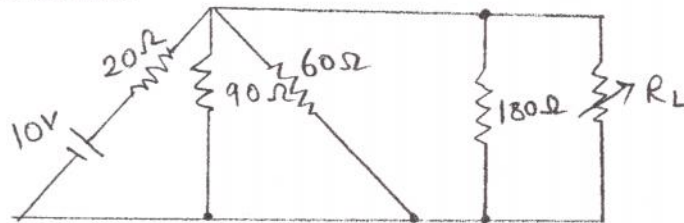
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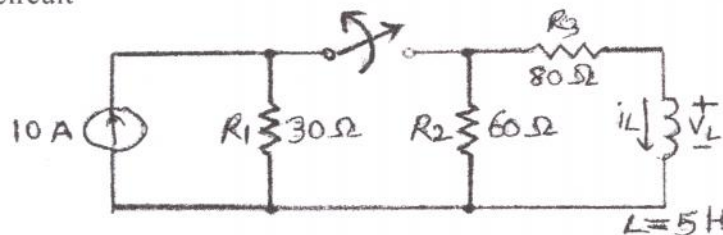
- Q.5. a. Find the Trigonometric Fourier Series for the waveform shown in following figure and plot line spectrum. 10



- b. For the following circuit what will be the value of  $R_L$  to get the maximum power? What is the maximum power delivered to the load? What is the maximum voltage across the load? What is the maximum current in it? 10



- Q.6. a. Determine  $i_L(t)$  &  $V_L(t)$  for  $t > 0$ . The switch is opened at  $t = 0$  in circuit 10



- b. Find currents in all the branches of the network at  $t = 0^+$ . 10

