



Reg No.: \_\_\_\_\_

Name: \_\_\_\_\_

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY  
B.Tech Degree S2 (R,S) Examinations April 2026 (2024 Scheme)

**Course Code: PCECT205**  
**Course Name: NETWORK THEORY**

Max. Marks: 60

Duration: 2 hours 30 minutes

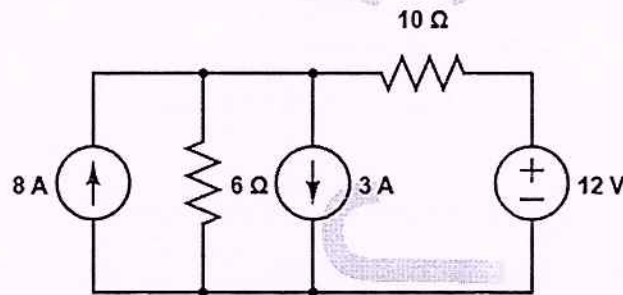
**PART A**

*(Answer all questions. Each question carries 3 marks)*

CO Marks

- 1 State and explain Kirchoff's laws.
- 2 Using source transformation, find the current through  $10\Omega$  resistor.

CO1 (3)  
CO1 (3)



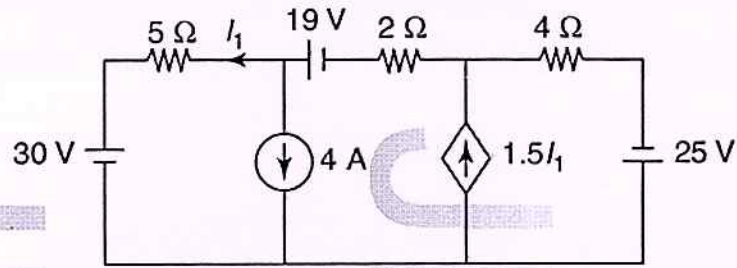
- 3 Illustrate the steps involved in finding the Norton's equivalent circuit of a network. CO2 (3)
- 4 State and explain Reciprocity theorem using an example. CO2 (3)
- 5 Find the inverse Laplace Transform of the function:  
$$F(s) = \frac{s^2 + 2s - 2}{s(s^2 - s - 6)}$$
 CO3 (3)
- 6 Derive an expression for the transfer function of a high pass RC circuit in s domain. CO3 (3)
- 7 Write down any four properties of driving point functions. CO4 (3)
- 8 Express z-parameters in terms of h-parameters. CO4 (3)

**PART B**

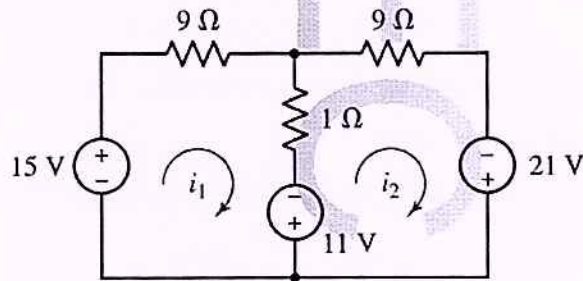
*(Answer any one full question from each module, each question carries 9 marks)*

**Module -1**

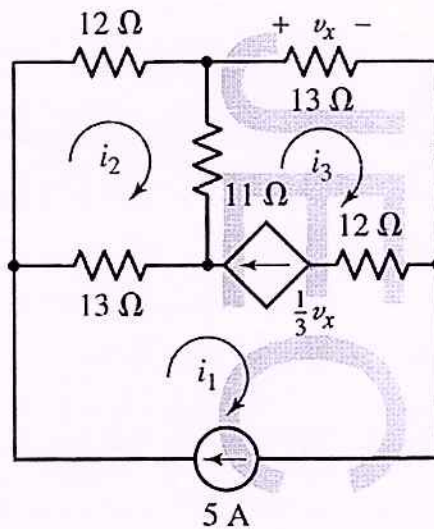
- 9 a) Find all the node voltages using node analysis. CO1 (5)



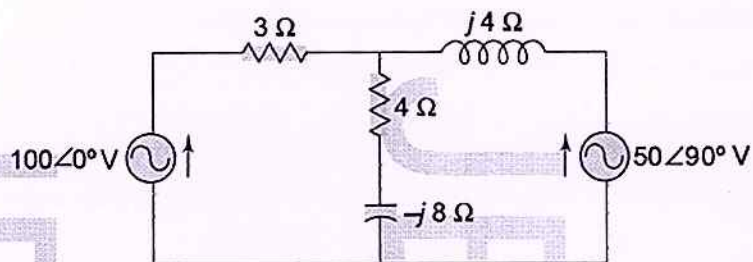
- b) Using mesh analysis find the current through  $1\Omega$  resistor. CO1 (4)



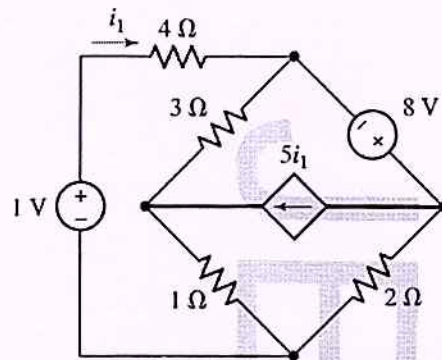
- 10 a) Calculate all the three mesh currents using mesh analysis. CO1 (5)



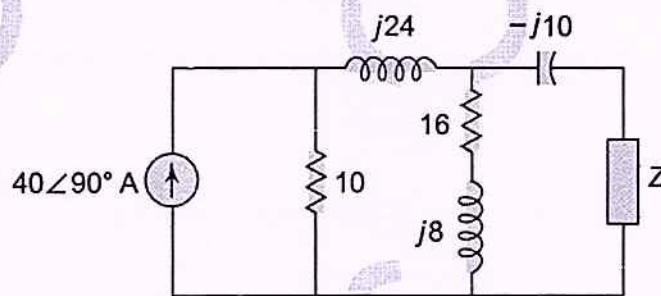
- b) Find all the node voltages using node analysis. CO1 (4)



- 11 Using Superposition theorem, find the current through the  $2\ \Omega$  resistor. CO2 (9)

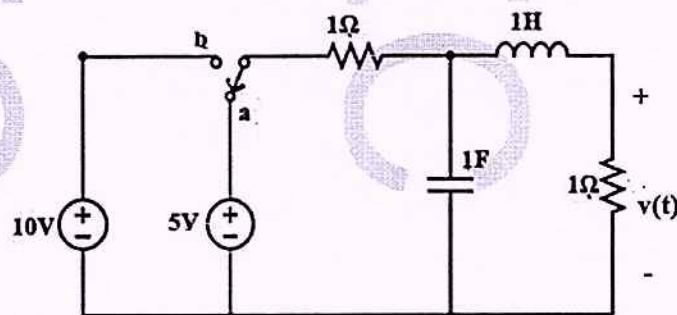


- 12 Find the value of  $Z$  for maximum power transfer. Also calculate the maximum power absorbed by  $Z$ . CO2 (9)

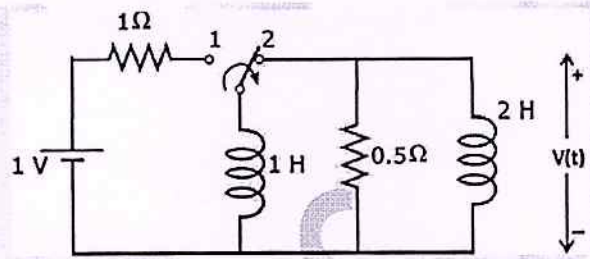


### Module -3

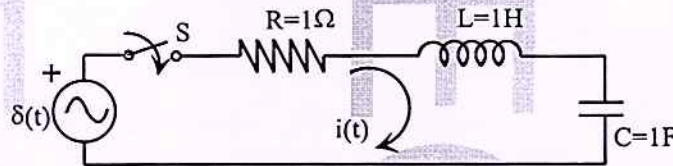
- 13 a) The network shown in figure has reached steady state condition before the switch move from a to b. At time  $t = 0$ , the switch moves from a to b. Determine the voltage,  $v(t)$  at  $t > 0$ . CO3 (7)



- b) State initial value and final value theorems. CO3 (2)
- 14 a) The switch is in position 1 for a long time. At time  $t = 0$ , it is moved to position 2. Find  $v(t)$  for  $t > 0$ . CO3 (6)

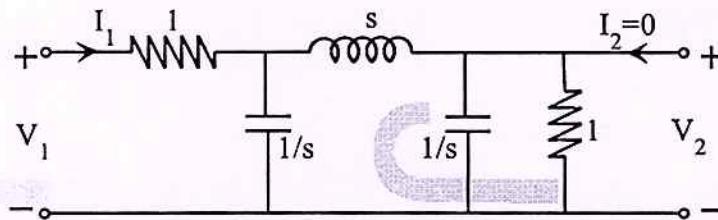


- b) Find the current  $i(t)$  in the given network when the switch is closed at  $t=0$ . CO3 (3)



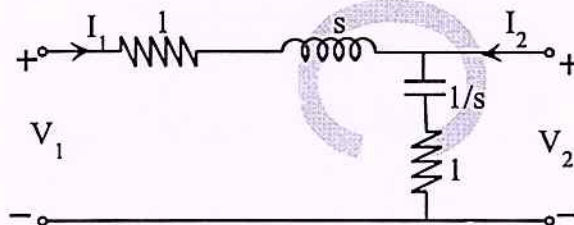
Module -4

- 15 a) Find the voltage transfer function  $\frac{V_2}{V_1}$  and driving point impedance function  $\frac{V_1}{I_1}$ . CO4 (6)



- b) Plot the pole-zero diagram of the function:  $F(s) = \frac{s^2 + 2s}{(s^2 + 9)(s + 3)}$  CO4 (3)

- 16 a) Find the ABCD parameters of the given network. CO4 (5)



- b) Find the z-parameters of the network if two identical sections of the given network are connected in series CO4 (4)

