Reg No.: _____ Name: _____

Jyothi Engineering College(Autonomous)

B. Tech Degree S2 (R) Examination, May 2026(2025 Scheme)

25ECT205 - NETWORK THEORY

EC

Total Mark: 60 **Total Time: 2hrs 30 min**

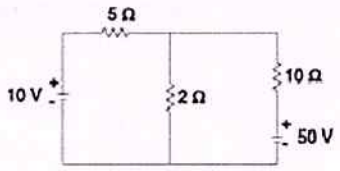
CO MARK

PART A

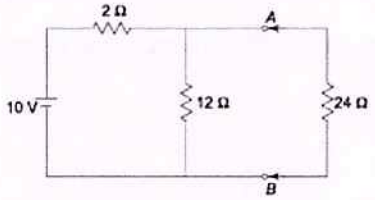
(Answer All Questions. Each question carries 3 marks)

1. Explain the concept of Super - Node Analysis with the help of a suitable example. CO1 (3)

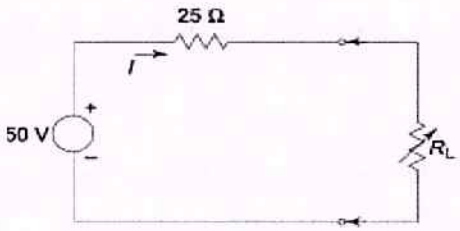
2. Write the mesh current equations in the circuit shown below, and determine the currents. CO1 (3)



3. Find the Thevenin's equivalent circuit for the diagram shown below. CO2 (3)



4. In the circuit shown below determine the value of load resistance when the load resistance draws maximum power. Also find the value of the maximum power. CO2 (3)



5. Find the partial fraction expansion for $F(S) = \dfrac{S-5}{S(S+2)^2}$. CO3 (3)

6. Find the Laplace Transform of ramp function f(t) = t. CO3 (3)

7. Draw and explain series connection of Two-Port Network. CO4 (3)

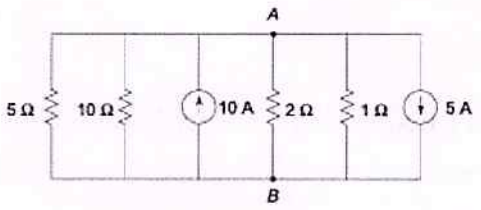
8. Draw and explain the equivalent circuit of short circuit admittance parameter. CO4 (3)

PART B

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

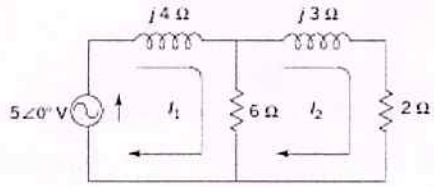
Module - 1

9. For the circuit shown below, find the voltage across the 10 ohm resistor and the current passing through it. CO1 (9)



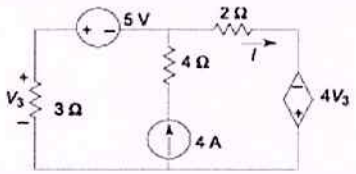
OR

10. Write the mesh current equations in the circuit shown below, and determine the currents. CO1 (9)



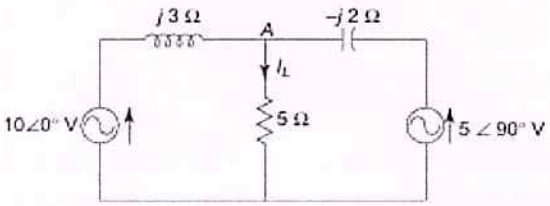
Module - 2

11. Determine the current through the 2 ohm resistor using the Superposition theorem. CO2 (9)



OR

12. For the circuit shown below, determine the load current I_L by using Norton's theorem. CO2 (9)

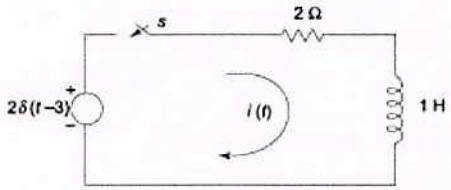


Module - 3

13. State and prove Initial Value Theorem. Also verify the theorem for the following function $2 - e^{5t}$. CO3 (9)

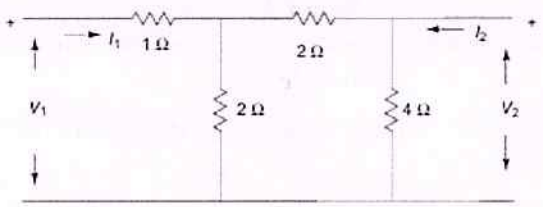
OR

14. For the circuit shown below, determine the current i(t) when the switch is closed at t = 0. Assume that the initial current in the inductor is zero. CO3 (9)



Module - 4

15. Two identical sections of the network shown below are connected in parallel. Obtain the Y parameters of the combination. CO4 (9)



OR

16. Draw the pole zero diagram for the given network function and hence obtain v(t). CO4 (9)

$$V(s) = \frac{4(s+2)s}{(s+1)(s+3)}$$

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