



II B.Tech I Sem Regular End Examination, February-2022

**Network Analysis**  
**(EEE)**

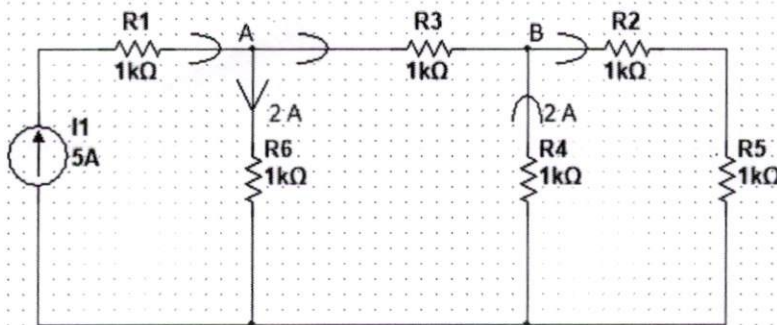
Max. Marks: 70

- Note: 1. Question paper consists: Part-A and Part-B.  
2. In Part - A, answer all questions which carries 20 marks.  
3. In Part - B, answer any one question from each unit.  
Each question carries 10 marks and may have a, b as sub questions.

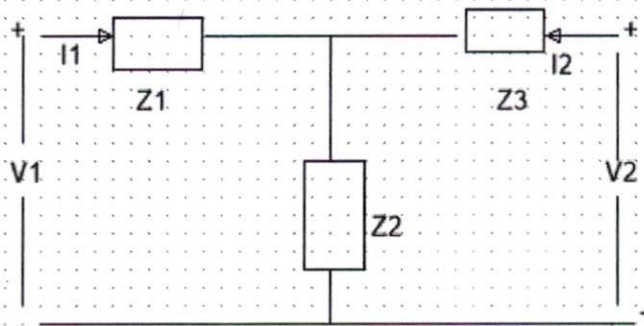
**PART- A**

(10\*2 Marks = 20 Marks)

1. a) Define the Nodal Analysis briefly and find the Current (I) across the R<sub>3</sub> resistor using Nodal Analysis? 2M C01 BL-1



- b) Define Duality Principal and List out its Network Elements. 2M C01 BL-2  
c) Illustrate the Current equation in Series RL Circuit. 2M C02 BL-2  
d) Distinguish between the source free & forced response with suitable example. 2M C02 BL-4  
e) Compare the Self & Mutually coupled circuits. 2M C03 BL-2  
f) Discuss the Series resonance and Parallel resonance. 2M C03 BL-6  
g) Discuss the Series RC circuit using Laplace Transform? 2M C04 BL-4  
h) Define the Transfer function briefly? 2M C04 BL-1  
i) Determine the Z-Parameters for given network? 2M C05 BL-5

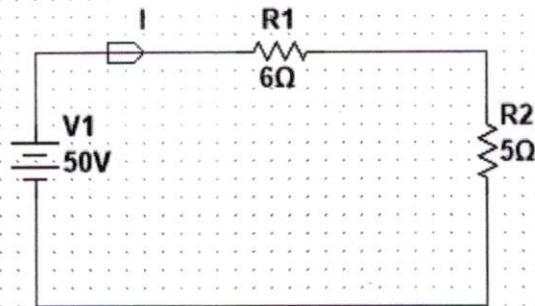


- j) Classify the Two-Port Network. 2M C05 BL-4

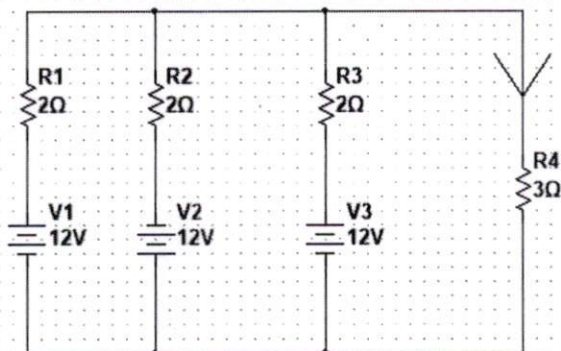
PART- B

(10\*5 Marks = 50 Marks)

- 2 a) Explain the Maximum Power Transfer theorem and Determine the power across 5ohm using Maximum Power theorem 5M C01 BL-5

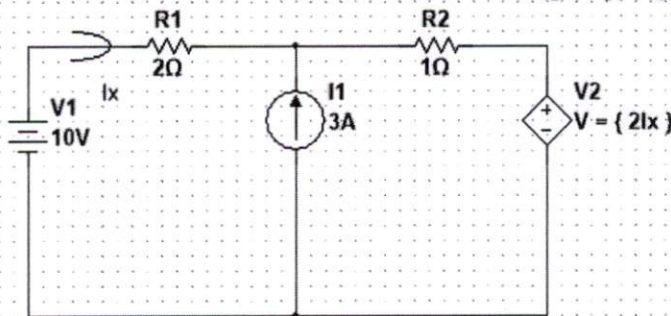


- b) Evaluate the Current using Millimans theorem. 5M C01 BL-5

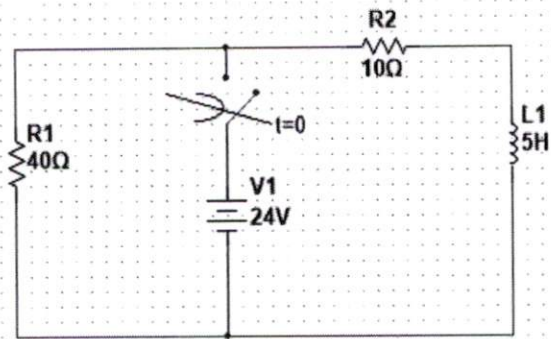


OR

- 3 10M C01 BL-5  
 Explain the Reciprocity theorem and Evaluate the current in below circuit using Super position theorem

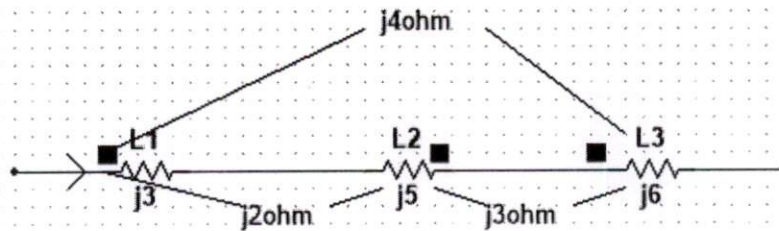


- 4 a) Define time constant. Derive the time constant in series RL circuit. 5M C02 BL-6  
 b) In given below fig the switch is closed for a long time and it is opened at  $t=0$ . Determine the  $i_l(0+)$ ,  $V(0+)$  for  $t \geq 0$  ? 5M C02 BL-5



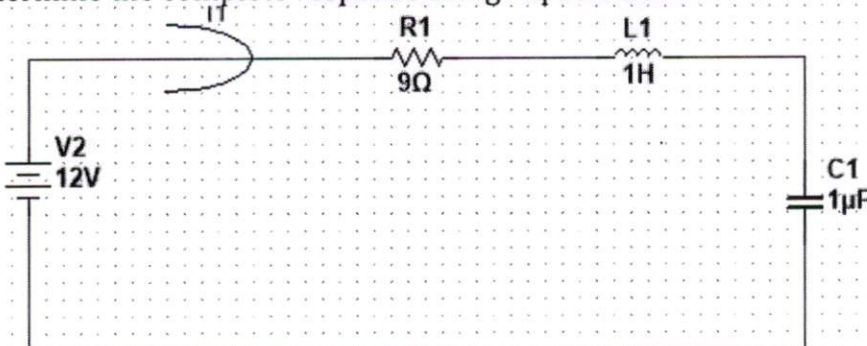
OR

- 5 Determine the complete response of 2<sup>nd</sup> order D.E for series RLC circuit? 10M C02 BL-5
- 6 a) Develop the expression for resonant frequency & BW for parallel RLC? 5M C03 BL-3
- b) Determine the equivalent impedance of given below circuit 5M C03 BL-5



OR

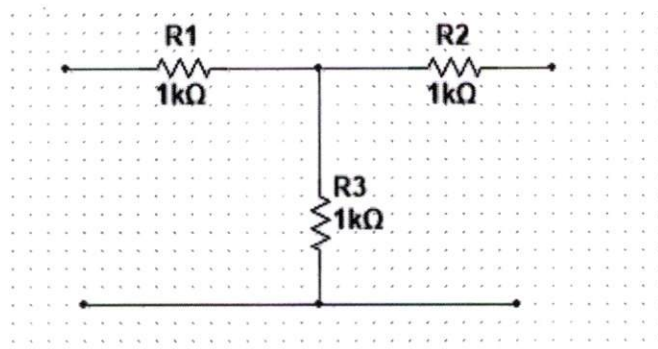
- 7 A series RLC circuit has  $R=10\text{ohm}$ ,  $L=0.5\text{ H}$ ,  $C=40\mu\text{F}$ , and applied voltage is  $100\text{v}$ . using these data solve the following terms  
 i) Resonant frequency  
 ii) Quality factor  
 iii) BW  
 iv) Voltage across the inductor 10M C03 BL-3
- 8 a) Evaluate the transfer function for parallel RC circuit? 5M C04 BL-5
- b) Determine the complete response using Laplace transform in 5M C04 BL-5



OR

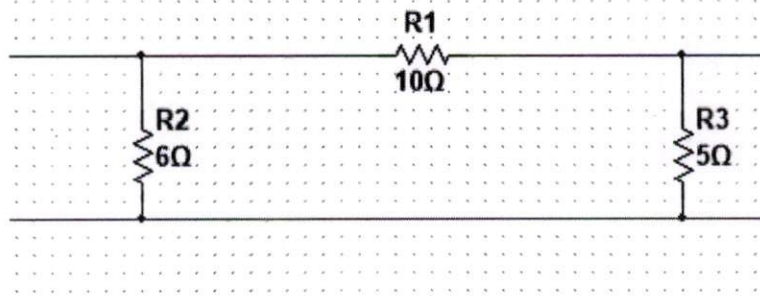
- 9 Explain the properties of Laplace transform and write its merits. 10M C04 BL-6
- 10 a) Design the Y-Parameters 5M C05 BL-6





b) Evaluate the ABCD parameters for below circuit

5M C05 BL-5



OR

11 Develop Z parameters in terms of Y parameters

10M C05 BL-6

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