| PRN: | |
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| Course Code : | U15PC303 |
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Second Year **B. Tech** End Semester Examination Winter 2024

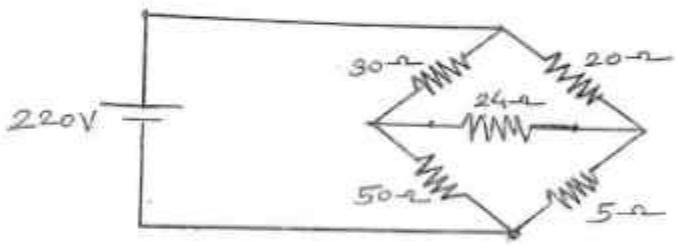
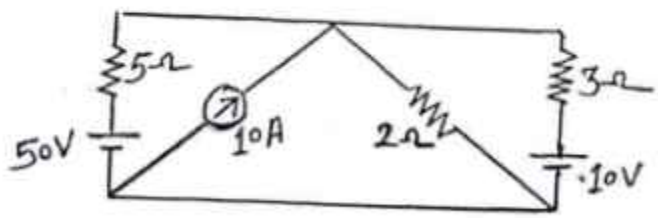
# Network Analysis & Synthesis 000190

Day and Date: Wed 27/11/2024 Max Marks: **50**

Time : 10:30AM To 12:30PM Duration: **02** hrs

Instructions:

1. All questions are compulsory.
2. Assume suitable data wherever necessary and mention it clearly.

| | | Marks | Bloom's Level | CO |
|---|---|---|---|---|
| **Q.1** | **Attempt the following Question.** | | | |
| a) | If two resistors of equal value are connected in parallel, what is the equivalent resistance. | 2 | | |
| b) | Define the tree and Co-trees with example | 2 | | |
| c) | Explain the concept of cascade connection in a two-port network. | 2 | 1 | 1 |
| d) | Define two types of two port network function. | 2 | | |
| e) | Check stability of system $S^3+5S^2+2S+12$ and find number of roots on RHP,LHP and jwp. | 2 | | |
| **Q.2** | **Attempt the following Question.** | | | |
| a) | Apply Thevenin's theorem for the network shown fig.1a and find Current through 24Ω   | 10 | 3 | 1 |
| | OR | | | |
| b) | Apply source transformation and find the power delivered by 50V source in the circuit.   | 10 | 3 | 2 |

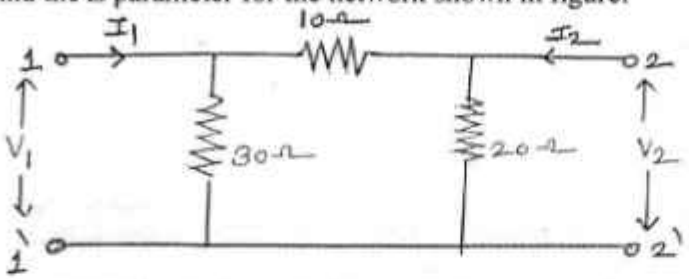
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**Q.3** **Attempt the following Question.**

a) What is two port network? Derive the Z parameter in terms of Y parameter — 10 | 1 | 3

OR

b) Find the Z parameter for the network shown in figure.

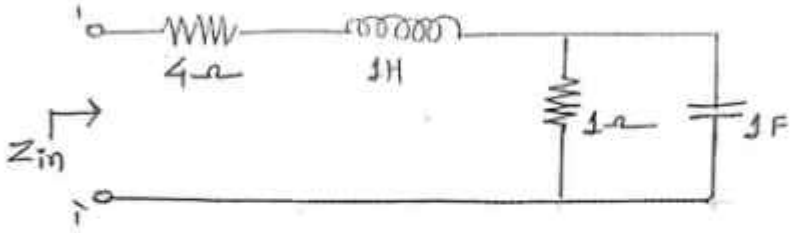



10 | 2 | 3

**Q.4** **Attempt the following Question.**

Find the input impedance $Z_{in}(S)$ and plot its poles and zeros for the circuit shown in figure.

a)




10 | 2 | 4

OR

b) Explain poles and zeros of network function with one example — 10 | 3 | 4

**Q.5** **Attempt the following Question.**

a) What is stability criterion? Determine the stability of $S^5+3S^4+4S^3+5S^2+6S+1=0$ also find roots on RHP, LHP and jwp — 10 | 3 | 5

OR

c) Discuss the R-H criterion and Provide a detailed explanation of the process involved — 10 | 2 | 5

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