

BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI
(MID SEMESTER EXAMINATION SP/2025)

CLASS: BTECH
BRANCH: CSE/AI ML/ECE/EEE

SEMESTER : II/ADD
SESSION : SP/2025

SUBJECT: EE24101 BASICS OF ELECTRICAL ENGINEERING

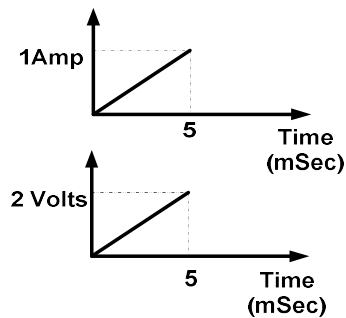
TIME: 02 Hours

FULL MARKS: 25

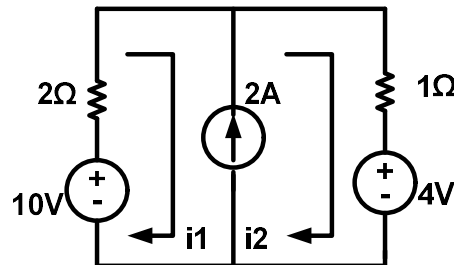
INSTRUCTIONS:

1. The question paper contains 5 questions each of 5 marks and total 25 marks.
2. Attempt all questions.
3. The missing data, if any, may be assumed suitably.
4. Tables/Data handbook/Graph paper etc., if applicable, will be supplied to the candidates

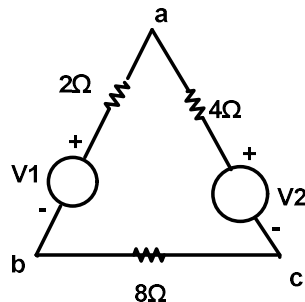
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|-----------------------------------------------------------------------------------------------------------------|-----|-----|----|
| Q.1(a) Define i) linear circuit ii) passive element iii) Potential difference iv) Mesh | [2] | CO | BL |
| Q.1(b) Current and voltage profile of element vs time has been shown. Determine the element and find the value. | [3] | CO1 | 3 |



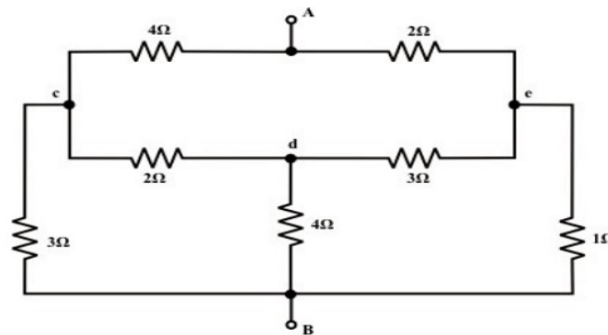
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|---------------------------------------------------------------------------------------------------------------------------------------------------|-----|-----|---|
| Q.2(a) How many 200 W/220 V incandescent lamps connected in series would consume the same total power as a single 100 W/220 V incandescent lamp ? | [2] | CO1 | 2 |
| Q.2(b) For the circuit shown find the current i_1 . | [3] | CO1 | 3 |



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|-------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|-----|---|
| Q.3(a) For the circuit shown below Potential difference between a and b, $V_{ab}=12$ volts , a and c , $V_{ac}=20$ volts. Find the value of V_1 and V_2 | [2] | CO1 | 2 |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|-----|---|



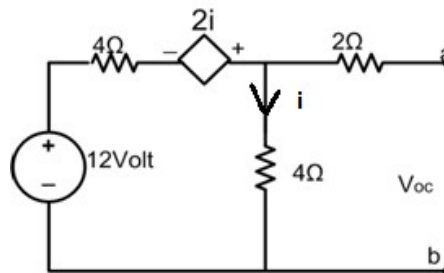
- Q.3(b) Determine the equivalent resistance between the terminals A and B of network shown in figure given below [3] CO1 3



- Q.4(a) State and explain the Norton's Theorem [2] CO2 1

- Q.4(b) explain the Superposition Theorem with the help of the circuit given in Question 2(b) [3] CO2 3

- Q.5(b) Find the Thevenin equivalent circuit about terminal ab for the circuit shown. Determine the value of resistance so that maximum power would flow from source to load [5] CO2 3



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