



End Term (Odd) Semester Examination November 2025

Roll no.....

Name of the Course and semester: B.Tech. I
Name of the Paper: Basic Electrical Engineering
Paper Code: TEE101
Time: 3 hour

Maximum Marks: 100

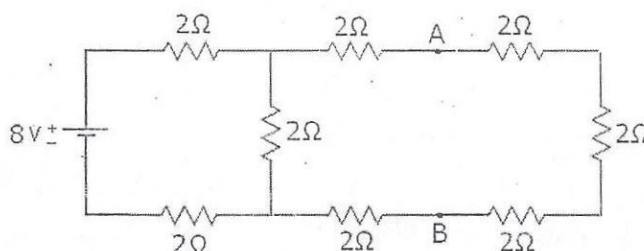
Note:

- (i) All the questions are compulsory.
- (ii) Answer any two sub questions from a, b and c in each main question.
- (iii) Total marks for each question is 20 (twenty).
- (iv) Each sub-question carries 10 marks.

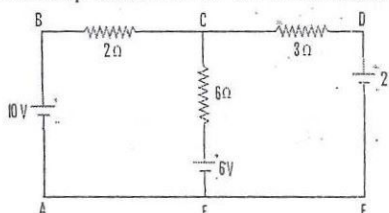
Q1.

(2X10=20 Marks)

- a. Define the following terms:
i) Charge ii) Electric current iii) Power iv) Network v) Open circuit vi) Short circuit vii) Mesh viii) Node ix) Supermesh condition x) Ohm's Law
- b. State the Thevenin theorem. Find out V_{Th} and R_{Th} across AB terminals and draw Thevenin Equivalent for the circuit shown in Fig. using Thevenin Theorem.



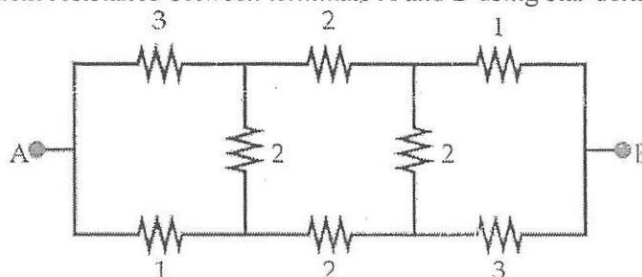
- c. Using loop current method, find the loop currents for the circuit shown in fig.



Q2.

(2X10=20 Marks)

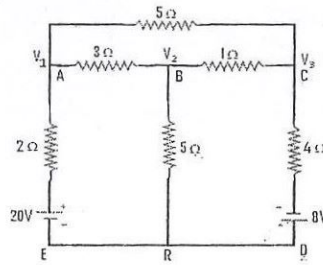
- a. What is the statement of maximum power transfer theorem? Derive the condition for maximum power transfer from source to load in DC Circuit.
- b. Determine the equivalent resistance between terminals A and B using star delta transformation.





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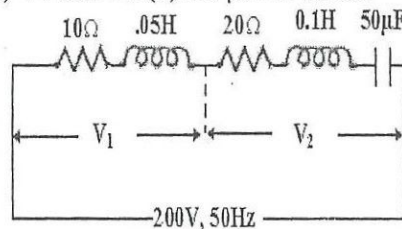
c. Determine the node voltages in the given circuit.



Q3.

(2X10=20 Marks)

- Describe construction and working of Lead Acid Cell with relevant diagram.
- Draw a vector diagram for the circuit shown indicating the terminal voltage V_1 and V_2 and the current. Find the values of (a) the current (b) V_1 and V_2 (c) the power factor.



c. Discuss the differences between MCCB and MCB

Q4.

(2X10=20 Marks)

a. Define the following AC terms:

- RMS value
- Average value
- Form factor
- Peak factor
- Instantaneous value

b. Derive the expression for power consumed in a series R-C circuit with waveforms and phasor diagrams.

c. A coil having a resistance of 6 ohm and an Inductance of 0.0255 H is connected across a 230 V, 50Hz AC supply. Calculate:-

- Current
- Power factor
- Active power
- Reactive power

Q5.

(2X10=20 Marks)

a. Discuss the principle and working of DC motor with relevant diagrams.

b. State and prove superposition theorem. (Consider a circuit containing one current source and one voltage source to prove the theorem)

c. Explain the concept and importance of earthing. Also discuss various components of earthing and their roles.