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TEE-101

B. Tech. (First Semester)

Mid Semester EXAMINATION, 2017

(All Branches)

BASIC ELECTRICAL ENGINEERING

Time : 1:30 Hours] [Maximum Marks : 50

Note : (i) This question paper contains two Sections.

(ii) Both Sections are compulsory.

Section—A

1. Fill in the blanks/True-False : (1×5=5 Marks)
 - (a) Thevenin's and Norton's theorem are applicable for only DC circuits. (True/False)
 - (b) Power factor for an RL circuit will be
 - (c) To deactivate voltage source we short circuit is and to deactivate current source we open circuit. (True/False)
 - (d) Reactive power in AC circuit is measured in
 - (e) Thevenins equivalent circuit consists of Parallel combination of V_{th} , R_{th} , and R_L . (True/False)

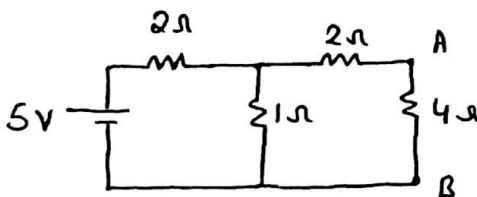
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2. Attempt any *five* parts : (3×5=15 Marks)
- Explain RMS and Average value for an AC waveform.
 - Explain current division rule.
 - What are active and passive components ?
 - Define capacitive reactance, and its dependence on frequency.
 - Explain different types of power involved in AC circuits.
 - What is the difference between AC and DC supply ?

Section—B

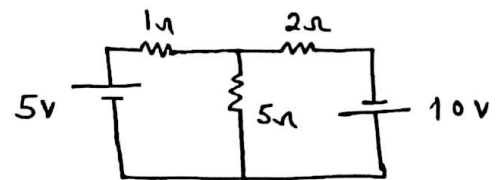
3. Attempt any *two* parts of choice from (a), (b) and (c). (5×2=10 Marks)
- State and explain Superposition theorem with suitable example.
 - Derive expression for conversion of a Delta network to a Star network.
 - Solve the circuit for the current in branch AB using Norton's theorem.



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4. Attempt any *two* parts of choice from (a), (b) and (c). (5×2=10 Marks)
- Derive expression for maximum power transfer theorem in a DC circuit.
 - Find the current that will flow through the coil of negligible resistance and inductance of 60 mH, when connected 230 V, 50 Hz single phase supply. What will be the current if the frequency is (i) decreased to 20 Hz, (ii) increased to 60 Hz ?
 - Determine the current in 5 ohm resistor of the circuit given below using Nodal analysis.



5. Attempt any *two* parts of choice from (a), (b) and (c). (5×2=10 Marks)
- Derive RMS and Average value for a pure sinusoidal waveform.
 - Explain different types of power involved in AC circuits.

(c) For the figure given below calculate :

- (i) Impedance of overall circuit
- (ii) Current taken by the circuit.

