

H

Roll No.

TEE-101

B. TECH. (FIRST SEMESTER) MID SEMESTER EXAMINATION, 2019 (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 : ($1 \times 5 = 5$ Marks)
 - (a) Thevenin's and Norton's theorem are applicable for only DC circuit. (True/False)
 - (b) Power factor at the time of resonance in series RLC circuit will be
 - (c) To deactivate voltage source we short circuit it and to deactivate current source we open circuit it. (True/False)
 - (d) Apparent power in AC circuit is measured in

(2)

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- (e) Norton's equivalent circuit consists of Parallel combination of I_n , R_n and R_L .

(True/False)

2. Attempt any *five* parts : (3×5=15 Marks)

(Define/Short Numerical/Short Programming/Draw)

- Explain R.M.S. and Average value for an AC waveform.
- Explain current division rule.
- What are active and passive components ?
- What is the significance of power factor in an AC circuit ?
- Active and Reactive power.
- Unilateral and Bilateral elements.

Section—B

3. Attempt any *two* parts of choice from (a), (b) and (c). (5×2=10 Marks)

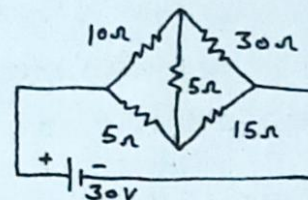
- Derive expression of RMS and Average value for pure sinusoidal waveform.
- State and explain Superposition theorem with suitable example.
- Find the current that will flow through the coil of 20 ohm resistance and inductance of 80 mH, when connected 230 V, 50 Hz single-phase supply. What will be the current if the frequency is decreased to 20 Hz ?

(3)

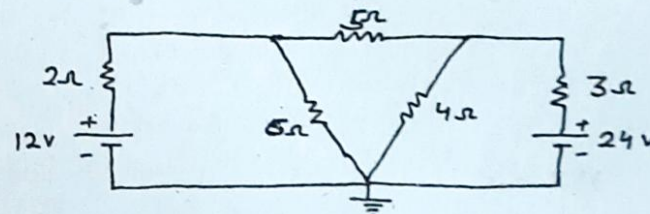
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4. Attempt any *two* parts of choice from (a), (b) and (c). (5×2=10)

- Find the equivalent resistance for the following circuit and hence calculate the current supplied by the source :



- Obtain the expression of Bandwidth for a series RLC circuit.
 - Explain Phenomenon of Resonance in series RLC circuit.
5. Attempt any *two* parts of choice from (a), (b) and (c). (5×2=10 Marks)
- Derive relationship between line and phase quantities for Star and Delta connection.
 - Determine the current in 5 ohm resistor of the circuit given below using Nodal analysis.



(c) A coil of resistance 10 ohm and inductance 0.02 H is connected in series with another coil of resistance 6 ohm and inductance 15 mH across a 230 V, 50 Hz supply. Calculate :

- (i) Impedance of the circuit.
- (ii) Voltage drop across each coil.
- (iii) Total power consumed by the circuit.