Code No: 123BR

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JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B.Tech II Year I Semester Examinations, September - 2021
BASIC ELECTRICAL ENGINEERING
(Common to CSE, IT)

Time: 3 hours **Max. Marks: 75**

Answer any five questions
All questions carry equal marks
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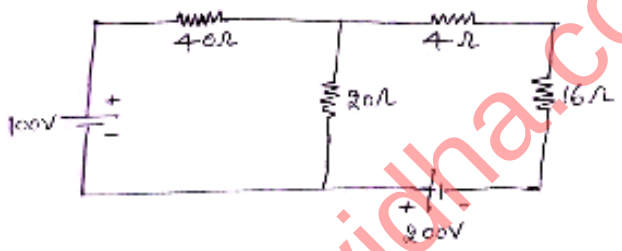
1.a) State and explain Maximum Power transfer theorem.
b) Find the current in the resistors $R_1 = 10\Omega$ and $R_2 = 20\Omega$ connected in parallel across a voltage source. The supply current is 50 A. Also, find power across each resistance. [8+7]

2. Using Super position theorem, find the current through the 20Ω resistor for the network shown below: [15]



3.a) Explain the terms with respect to Alternating Quantity:
i) Instantaneous value and ii) Time period.
b) If the form factor of a current waveform is 2 and the amplitude factor is 2.5, find the average value of the current if the maximum value of the current is 500 A. [8+7]

4.a) Explain the terms with respect to Alternating Quantity:
i) average value ii) Root mean square value iii) Maximum value.
b) A 230 V, 50 Hz voltage is applied to a coil L = 5 H and R = 2 Ω is in series with a capacitance C. What value must C have in order that the voltage across the coil is 400 V? [8+7]

5.a) Derive the expression of emf induced in a transformer.
b) Explain the working of transformer on lagging power factor load with a neat phasor diagram. [8+7]

6.a) Explain the various constructional features to be considered for a single phase transformer.
b) In a 25 KVA, 2000/200 V transformer the iron and full load copper losses are 350 W and 400 W respectively. Find the efficiency at 0.8 power factor lagging at i) Full load and ii) Half load. [7+8]

7.a) Derive the emf equation of a dc generator.
b) Explain the working of a 3-phase Induction Motor. [7+8]

8. Explain the working of Attraction type moving iron instrument with a neat sketch. [15]

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