Code No: 123BR

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JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B.Tech II Year I Semester Examinations, October - 2020
BASIC ELECTRICAL ENGINEERING
(Common to CSE, IT)

Time: 2 hours **Max. Marks: 75**

Answer any five questions
All questions carry equal marks
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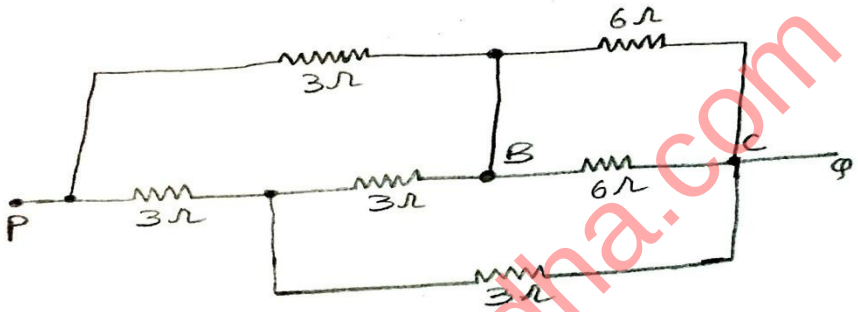
1.a) What is maximum power transfer theorem? Prove the theorem.
b) Three resistances of 25Ω, 50Ω and 100Ω are connected in parallel. If the total current drawn is 32 A, calculate the current drawn by each resistor. [9+6]

2. Calculate the equivalent resistance across terminals P and Q for the network shown below. [15]



3. Find the average value, RMS value and the form factor of the sinusoidal waveform. [15]

4.a) Prove that the average value of any symmetrical wave over a complete cycle is zero.
b) In an R-L-C Series circuit, the voltage across R is 160 V, across L is 240 V, and total power consumed is 1000 W. when a voltage of 200 V at 50 Hz is applied across the circuit. Calculate value of the capacitor and the current flowing through the circuit. [7+8]

5.a) Draw and explain the equivalent circuit of a transformer under the no – load condition.
b) Explain the necessary tests that are conducted on transformer to find the efficiency and regulation. [7+8]

6.a) Derive the emf equation of a Transformer.
b) The efficiency of 400 / 200 V, 200 KVA transformer is 98.5% at full load and at 0.8 lagging power factor. At half load, 0.8 power factor lagging the efficiency is 97.5%. Calculate the values of core loss and full load copper loss. [7+8]

7.a) Explain the constructional details of a DC Machine with a neat sketch.
b) A dc machine induces an emf of 240 V at 1500 rpm. Find the developed torque for an armature current of 25 A. [10+5]

8. Explain the following with respect to Instruments:
a) Indicating b) Recording c) Integrating. [15]

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