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BACHELOR OF TECHNOLOGY (C.B.C.S.) (2021-COURSE)
B. Tech. Sem - I MECHANICAL : WINTER- 2022
SUBJECT : ELECTRICAL ENGINEERING SYSTEMS

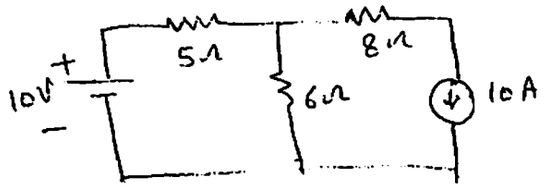
Day : Friday | Time : 10:00 AM-01:00 PM

Date : 13-01-2023 | **W-24059-2022** | Max. Marks : 60

N.B :

1) All questions are **COMPULSORY.**
2) Figures to the right indicate **FULL** marks.

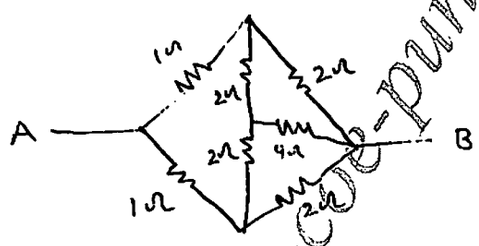
Q.1 **a)**



(05)

Find current across 6 ohm resistance using superposition theorem.

b)



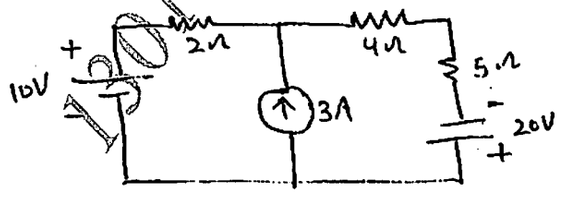
(05)

Find equivalent resistance between A and B.

OR

Q.1 **a)** Explain Thevenin's theorem with suitable example. **(05)**

b) **(05)**



Find current across 5 ohm resistance.

Q.2 **a)** Explain the significance of power factor. **(05)**

b) Explain the concept of series resonance in AC circuit. **(05)**

OR

Q.2 **a)** Explain why current legs by voltage in pure inductor circuit. **(05)**

b) Explain parallel resonance in AC circuits. **(05)**

Q.3 **a)** Explain why transformers are connected in parallel. State the condition for parallel operations. **(05)**

b) What will happen if we connect DC supply to the primary side of the transformer. **(05)**

P.T.O.

OR

Q.3 **a)** Explain transformer working principle with equivalent circuit and phasor diagram. **(05)**

b) What will happen if we change supply frequency of the transformer. **(05)**

Q.4 **a)** Explain construction and working principle of servomotor with application. **(05)**

b) A 4 pole, 50 Hz, 3-ϕ Induction motor run on full load develop useful torque 150-Nm at rotor frequency of 2Hz, Calculate shaft output power. If mechanical losses will be 10 Nm. Stator total losses 800 watt. Find copper loss in rotor, input to rotor and efficiency. **(05)**

OR

a) Explain the working principle of 3-ϕ Induction motor. **(05)**

b) Explain why 1-ϕ induction motor are not self started. **(05)**

Q.5 **a)** What will happen if load is removed from DC series motor in operation. **(05)**

b) Write EMF equation of DC machine. **(05)**

OR

a) Draw torque speed characteristics of DC series and shunt motor. **(05)**

b) A 100 kw, 220 v shunt generator has field resistance of 44 ohm and armature resistance of .05 ohm. Find full load generated voltage. **(05)**

Q.6 **a)** Find the transmission parameters ABCD for medium transmission line? **(05)**

b) Explain precautions against electric shock. **(05)**

OR

a) Explain the importance of earthing and type of earthing. **(05)**

b) Define distribution systems in detail. **(05)**

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