QP-507

Seat No. 1324

Total No. of Pages : 2

MAR-APR-2024 SUMMER EXAMINATION

B.Tech. CBCS

Sub. Name: Basic Electrical Engineering

Sub. Code: 71812

Total Marks: 70

Day and Date: MAY ,18-05-2024

Time: 10:30 AM To 01:00 PM

Instructions:
1. Assume suitable data wherever necessary and mention it boldly
2. Draw neat labbelet diagrams wherever necessary
3. Figures to the right indicate full marks
4. Use of Scientific calculator is allowed

Special Inst.: Attempt Any 3 Questions, from Question number 1 to 4.
Attempt Any 3 Questions, from Question number 5 to 8.

Q1) Answer the Following [12]

a) State and explain Kirchhoff's Laws applicable to electrical circuit with suitable example. [06]

b) Two batteries A & B are connected in parallel across a load resistance of 5 Ω. The emf & internal resistance of battery A & B are 10 volts, 0.2 Ω and 12 volts, 0.25 Ω respectively, using mesh or node analysis, find current in load resistance. [06]

Q2) Answer the Following [11]

a) Define and state the units-
i) Magnetic flux ii) Reluctance iii) Magnetic flux density. [06]

b) With neat sketch and equations, Distinguish Electric circuit and Magnetic circuit. [05]

Q3) Answer the Following [11]

a) Derive Expression of current and power for pure Capacitive circuit. [05]

b) A Resistance of 4.5 Ω & Inductance of 0.03 Henry are connected in series, across 230 volts, 50 Hz ac supply. Find- (i) Impedance (ii) Current (iii) Power factor. [06]

Q4) Answer any TWO [12]

a) Explain the concept of B-H curve for magnetic and non-magnetic material. [06]

b) Define the terms and their units-
i) Potential Difference, ii) Current, iii) Power. [06]

c) Derive the expression for RMS value by analytical method. [06]

Q5) Answer the Following [12]

a) Define and Explain with neat sketch:
i) Balanced 3 phase load,

P.T.O.

ii) Unbalanced 3 phase load,

iii) Phase Sequence of 3 phase power supply. [06]

b) Prove that Line Voltage is $\sqrt{3}$ times Phase Voltage in three phase star connected circuit. [06]

Q6) Answer the Following **[11]**

a) Describe construction and working of Fluorescent tube with its Applications. [05]

b) State various types of Earthing electrodes. Explain any one with neat sketch. [06]

Q7) Answer the Following **[11]**

a) State working principle of transformer. Comment on KVA rating of transformer. [05]

b) A 60 KVA, 2500V/220V, 50Hz single phase transformer has iron loss of 400W. The primary and secondary winding resistances are 0.8 ohm and 0.012 ohm respectively. If load power factor is 0.85 lagging, calculate transformer efficiency at full load and at half load. Also calculate primary and secondary full load currents. [06]

Q8) Answer any TWO **[12]**

a) Draw three phase Star and Delta connections. Explain the terms Line voltage, Line current, Phase voltage, Phase current. [06]

b) Describe construction and working of Filament Lamp with its advantages and disadvantages. Also state its applications. [06]

c) With neat sketch explain the types of transformers. [06]

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