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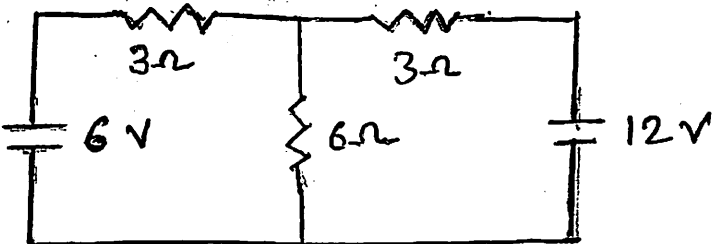
Enrollment No:-----

Department of Computer Science & Engineering
School of Engineering Sciences & Technology
JAMIA HAMDARD
New Delhi-110062
Odd Semester Examination-2024

Subject Name: Basic Electrical Engineering**Subject Code:** BTECE/BTCSEAI -103**Time:** 2 Hours 30 Minutes**Maximum Marks:** 60**Section-A (Attempt all questions: (4 x 5 marks = 20 Marks))**

Q.No	Questions	Marks	CO	BL
Q1.	Explain the terms RMS value and average value of sinusoidal waveform, Derive also the expression for RMS value and average value of sinusoidal waveform	5	CO1	BL4
Q2.	Two batteries A and B are connected in parallel to a load of $10\ \Omega$. Battery A has an emf of 12V and an internal resistance of $2\ \Omega$ and battery B has an emf of 10V and an internal resistance of $1\ \Omega$. Using nodal analysis, determine the current supplied by each battery and load current.	5	CO2	BL3
Q3.	Describe different losses that occur in 3Φ induction motor.	5	CO4	BL2
Q4.	A $3300\text{ V} / 200\text{ V}$, 50 Hz , 100 KVA transformer has its low voltage winding with 80 turns. Calculate:- (a) Primary and secondary current on full load (b) Maximum value of the flux (c) Number of turns of high voltage winding	5	CO3	BL3

Section-B (Attempt any four questions: (4 x 10 Marks = 40 Marks))

Q.No	Questions	Marks	CO	BL
Q1.	Explain super position theorem and write the procedure to analyze the network circuit by superposition theorem. Determine the branch current across $6\ \Omega$ by using superposition method. 	10	CO1	BL1
Q2.	What are the different speed control methods of 3Φ induction motor and why the speed control needed of 3Φ induction motor? Calculate synchronous speed of a 4 pole, three phase induction motor which is getting 400 V , 50 Hz . Calculate the slip if the motor is running at 1410 rpm .	10	CO4	BL3
Q3.	What is an auto-transformer? Discuss its merits and demerits over a two winding transformer. Also discuss magnetic hysteresis and why magnetic circuits are usually laminated?	10	CO3	BL2
Q4.	A 220 V , 50 Hz is applied to a coil of 0.8 H inductance and $2\ \Omega$ resistance connected in series with $5.8\ \mu\text{F}$ capacitor. Calculate current, Impedance, Phase angle, Power factor, Active power, reactive power and apparent power.	10	CO2	BL5
Q5.	Derive an expression for the frequency at which voltage across inductor and capacitor become maximum. Is this the same as resonance frequency? Also calculate half power frequencies of a series resonant circuit where the resonance frequency is 150 kHz and bandwidth is 75 kHz	10	CO4	BL3
Q6.	Write short notes on any two: (a) Electrical protection devices (b) Earthing need and their types (c) Low power factor cause, drawback & improvement techniques (d) Sinusoidal modulation	10	CO5	BL4