Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER– I & II (OLD) EXAMINATION – WINTER 2019

Subject Code: 110005 Date: 11/01/2020

Subject Name: Elements Of Electrical Engineering

Time: 10:30 AM TO 01:00 PM Total Marks: 70

Instructions:

1. **Attempt all questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**

Q.1	**(a)**	Define the following terms with respect to AC waveforms: (1) Angular velocity (2) Form factor (3) Crest Factor (4) Instantaneous Value (5) RMS Value (6) Phase angle (7) Frequency	**07**
	(b)	Compare electric circuit and magnetic circuit by their similarities and dissimilarities.	**07**
Q.2	**(a)**	Define the following terms with reference to Electrostatics & Electromagnetic: (1) Electric potential (2) Electric flux density (3) Permittivity (4) Electric field intensity (5) MMF (6) Magnetic flux density (7) Reluctance	**07**
	(b)	A 100 V, 100 W lamp is connected in series with 100 V, 60 W lamp across 200 V supply. Determine current drown and power consumed by each lamp.	**07**
Q.3	**(a)**	Explain resonance in series R-L-C circuit with graphical representation and resonance curve.	**07**
	(b)	Explain the method of transforming a star network into a delta network.	**07**
Q.4	**(a)**	Explain two wattmeter method for power measurement in 3-phase delta connected load.	**07**
	(b)	Derive an expression for the energy stored in an inductor of self inductance 'L' henrys carrying the current of 'I' amperes.	**07**
Q.5	**(a)**	A circuit consists of a pure inductor, a pure resistor and a capacitor connected in series. When the circuit is supplied with 100 V, 50 Hz supply, the voltage across inductor and resistor are 240 V and 90 V respectively. If the circuit takes 10 A leading current, calculate (i) value of inductance, resistance and capacitance (ii) power factor of the circuit (iii) voltage across capacitor.	**07**
	(b)	Derive expressions of voltage and current for capacitor of C farads during charging process.	**07**
Q.6	**(a)**	Explain the construction of a cable with functions of its various parts with the help of neat diagram.	**07**
	(b)	Explain charging and discharging of Lead acid battery.	**07**
Q.7	**(a)**	What is importance of earthing ? Explain plate earthing with diagram.	**07**
	(b)	Explain the types of lighting schemes with suitable diagrams.	**07**

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