Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

PDDC– SEMESTER I– • EXAMINATION –WINTER- 2016

Subject Code: X10901 **Date:07/01/2017**

Subject Name: Elements of Electrical Engineering

Time: 10:30 AM to 1:00 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)**	State and explain Kirchhof's voltage and current laws with suitable examples.	**07**
	(b)	Compare electric circuit with magnetic circuit.	**07**
Q.2	**(a)**	Explain the method of transforming a delta connected network in star network.	**07**
	(b)	Explain the phenomena of rise in current through inductance and derive the equation.	**07**
		OR	
	(b)	Explain Faraday's laws of electromagnetic induction.	**07**
Q.3	**(a)**	Explain B-H curve for magnetic circuit.	**07**
	(b)	Explain the different types of capacitors.	**07**
		OR	
Q.3	**(a)**	Explain resonance in R-L-C series circuit.	**07**
	(b)	A certain waveform has a form factor of 1.2 and a peak factor of 1.5. If the maximum value is 100, find rms value and average value.	**07**
Q.4	**(a)**	Write the name of methods to solve ac parallel circuits. Explain any one in detail.	**07**
	(b)	Define and explain: (i) RMS value (ii) Average value (iii) Peak factor (iv) Form factor (v) Frequency.	**07**
		OR	
Q.4	**(a)**	What are the methods to measure 3-phase power ? Explain two wattmeter method in detail.	**07**
	(b)	Discuss about the Comparison between series and parallel resonance.	**07**
Q.5	**(a)**	Derive the equation of charging of capacitor. Draw the graph of capacitor voltage and current w.r.t. time.	**07**
	(b)	Prove that average power consumed by purely inductive circuit is zero.	**07**
		OR	
Q.5	**(a)**	Derive the relation between line current and phase current in delta and star connection of 3-phase system.	**07**
	(b)	A series RLC circuit consists of a resistance of 500 Ohm, inductance of 50 mH and capacitance of 20 pF. Find (i) The resonant frequency (ii) The Q-factor (iii) Half power frequency.	**07**

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