

**GUJARAT TECHNOLOGICAL UNIVERSITY****PDDC - SEMESTER-I • EXAMINATION – WINTER 2013****Subject Code: X10901****Date: 21-12-2013****Subject Name: Element of Electrical Engineering****Time: 10.30 am - 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) State and explain Ohm's law and its limitations. **07**  
(b) Describe the effect of temperature on resistance and derive necessary equations. **07**
- Q.2** (a) Explain the method of transforming a star connected network in delta network. **07**  
(b) State and explain KVL. **07**
- OR**
- (b) State and explain KCL. **07**
- Q.3** (a) Write a short note on different types of capacitors. **07**  
(b) Obtain the expression for the equivalent capacitance when capacitors are connected in series. **07**
- OR**
- Q.3** (a) Obtain the expression of energy stored in capacitor. **07**  
(b) Obtain the expression for the equivalent capacitance when capacitors are connected in parallel. **07**
- Q.4** (a) Comparison between electric and magnetic circuit. **07**  
(b) State and explain Faraday's laws of electromagnetic induction. **07**
- OR**
- Q.4** (a) State Fleming's left hand rule to find the direction of force experienced by a current carrying conductor placed in magnetic field. **07**  
(b) Explain the hysteresis and eddy current loss. **07**
- Q.5** (a) Derive expression for impedance, current and power factor for R-C series circuit when supplied with AC voltage. **07**  
(b) Comparison between series and parallel resonance. **07**
- OR**
- Q.5** (a) Derive expression for total power for a balanced three phase star connected load in terms of line voltage, line current and power factor. **07**  
(b) Show that the power input to a 3-phase circuit can be measured by two wattmeter connected properly in circuit. **07**

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