22239

12425 03 Hours / 7	0 Marks Seat No.
Instructions $-$ (1)	All Questions are Compulsory.
(2)	Answer each next main Question on a new page.
(3)	Illustrate your answers with neat sketches wherever necessary.
(4)	Figures to the right indicate full marks.
(5)	Assume suitable data, if necessary.
(6)	Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.
	Marks

SECTION - I

1. Attempt any <u>FIVE</u> of the following:

- a) State Kirchoff's current and voltage law.
- b) State the losses in transformer.
- c) State the units of current, voltage power and energy.
- d) List types of 1¢ transformer. State its applications.
- e) State the difference between Analog and Digital meter.
- f) List the types of Lamps. State use (at least 2) of it.
- g) List applications of Induction motor.

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2. Attempt any THREE of the following:

- a) Sketch the construction diagram of servomotor. State two applications of servomotor.
- b) Define power factor. State and explain methods of improvement of P.F.
- c) Explain working principle of 1¢ transformer.
- d) Compare CFL and LBD (4 pts)
- e) List the methods of energy saving in textile industry. Explain any one method used for energy saving in textile industry.

3. Attempt any THREE of the following:

- a) A 50 KVA single phase transformer has primary winding of 230 turns and secondary winding of 160 turns. Supply voltage is 2500 V, 50 Hz. Calculate Secondary Voltage, Primary and Secondary current and value of flux.
- b) Explain working principle of 3ϕ and induction motor.
- c) Sketch line diagram of 3ϕ and wiring circuit. State the importance of wiring diagram.
- d) State :
 - i) Kirchoff's Laws
 - ii) Lenz's Law
 - iii) Fleming's Right and Left hand rules.

SECTION - II

4. Attempt any SIX of the following:

- a) State Active and Passive components. State example of each.
- b) Draw symbol of Inductor, Resistor, Capacitor, Diode.
- c) Draw forward biased characteristics of diode, with knee voltage.
- d) State the name of material used for photo diode.
- e) Sketch construction of LED.
- f) List two applications of Pressure Sensors.
- g) List application of Temperature Sensors.

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5. Attempt any <u>THREE</u> of the following:

- a) Calculate value of following resistor
 - i) Black Red Red, Gold
 - ii) 47K $\Omega \pm 10\%$
- b) Sketch and explain working of FWR with center tapping.
- c) Explain working principle of Thermocouple.
- d) List Pressure Sensors, Temperature Sensors, Optical Sensors, Displacement Sensors.

6. Attempt any <u>TWO</u> of the following:

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- a) Explain V-I charactuistion of PN junction diode.
- b) Explain working principle working of Humidity Sensor and Bourdon tubes.
- c) Explain electric and pneumatic Actuators.