

22239

22223

3 Hours / 70 Marks

Seat No.

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- Instructions* – (1) All Questions are *Compulsory*.
(2) Answer each Section on separate answer book.
(3) Illustrate your answers with neat sketches wherever necessary.
(4) Figures to the right indicate full marks.
(5) Assume suitable data, if necessary.
(6) Use of Non-programmable Electronic Pocket Calculator is permissible.
(7) Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.

Marks

Section - I

1. **Attempt any FIVE of the following:** **10**
- a) Define the term : Energy and give its unit.
 - b) State the unit of emf and define emf.
 - c) Define power factor and state its significance.
 - d) List two applications of single phase transformer.
 - e) Name two types of servomotors.
 - f) Compare CFL and LED lamps.
 - g) State working principle of solar electricity.

P.T.O.

- 2. Attempt any THREE of the following:** **12**
- a) Draw a circuit of series R-L circuit and draw its phasor diagram and comment on it.
 - b) Draw the constructional diagram of single phase transformer and state its working principle.
 - c) Explain the construction of servo motor in single phase.
 - d) List methods and explain how energy saving is achieved in textile industry.
 - e) Compare between CFL and LED lamps. (four points)

- 3. Attempt any TWO of the following:** **12**
- a) State and explain Kirchoff's voltage law and current law.
 - b) State working principle of induction motor, list its types and define the efficiency for them.
 - c) Describe the use of electrical machines in textile industry with their specific purpose.

Section - II

- 4. Attempt any SIX of the following:** **12**
- a) Classify passive components.
 - b) Give two applications of amplifier.
 - c) Identify the value of resistor using colour code chart.
 - i) Brown Black Orange Gold
 - ii) Yellow Violet Brown Silver
 - d) Name any two properties of capacitor.
 - e) Differentiate between LDR and photodiode.
 - f) List two examples of displacement sensors.
 - g) State the operating principle of strain gauge.
 - h) Define operating principle of LVDT.

- 5. Attempt any THREE of the following:** **12**
- a) State and explain the working principle of bourbon tube.
 - b) Explain the working of phototransistor as an optical sensor.
 - c) Draw the circuit of full wave rectifier and state its working principle.
 - d) Name the three operating regions of transistor with their functions.
- 6. Attempt any TWO of the following:** **12**
- a) Draw the forward and reverse bias V-I characteristics of diode and comment on it.
 - b) Name the types of actuators used in textile industry with their uses. (any six)
 - c) Apply the appropriate sensors and actuators for temperature measurement in textile processing with the help of neat sketch. Assume any one application used in textile processing.
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