

22239

21222

3 Hours / 70 Marks

Seat No.

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15 minutes extra for each hour

- Instructions* – (1) All Questions are *Compulsory*.
- (2) Illustrate your answers with neat sketches wherever necessary.
- (3) Figures to the right indicate full marks.
- (4) Assume suitable data, if necessary.
- (5) Use of Non-programmable Electronic Pocket Calculator is permissible.
- (6) 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 voltage and give its unit.
- b) State Kirchhoff's law of current.
- c) State working principle of single phase transformer.
- d) State any two applications of servomotor.
- e) Define term power factor.
- f) State uses of PMMC Instrument.
- g) State methods of energy saving in textile Industry.

P.T.O.

- 2. Attempt any THREE of the following:** **12**
- a) A coil having resistance 10Ω and an inductance of 0.2 H is connected across 100V , 50Hz supply. Calculate impedance, reactance, current power factor.
 - b) Explain construction of single phase induction motor with neat sketch.
 - c) $220/110\text{ V}$, 2 KVA single phase transformer is supplied with 220V 50Hz AC supply. Find rated primary and secondary current.
 - d) Compare CFL and LED.
 - e) Draw three phase wiring diagram for any textile industry.
- 3. Attempt any THREE of the following:** **12**
- a) Draw and explain the phasor diagram for series R-C circuit.
 - b) A 20 KVA $3000/300\text{ v}$, 50 Hz single phase transformer has 800 turns on the primary. Determine
 - i) Number of turns on secondary
 - ii) Maximum flux in the core.
 - c) A four pole and three phase induction motor operates from a supply whose frequency is 50 Hz . Calculate
 - i) The speed at which magnetic field of the stator is rotating.
 - ii) Determine the percentage slip if rotor is rotating at 1200 rpm .
 - d) Explain Solar Energy System.

SECTION - II

- 4. Attempt any SIX of the following: 12**
- a) State difference between active and passive electronic component.
 - b) Define term conductor and Insulator.
 - c) Draw symbol of NPN and PNP transistor.
 - d) List any two applications of P-N junction diode.
 - e) List any two optical sensor and displacement sensor.
 - f) Define operating principle of thermocouple.
 - g) Draw V-I characteristics of P-N junction diode.
- 5. Attempt any THREE of the following: 12**
- a) Identify value of resistor using color code chart.
 - i) Brown, Black, Red, Gold.
 - ii) Red, Red, Green, Silver.
 - b) Explain working principle of transistor as switch.
 - c) State operating principle of LVDT with neat sketch.
 - d) Compare RTD and thermistor.
 - e) Explain Sizing and automatic weft straightening.
- 6. Attempt any TWO of the following: 12**
- a) Explain half wave rectifier with suitable diagram and waveform.
 - b) Explain the steps to measure the temperature of given liquid using thermocouple.
 - c) Explain use of bourdon tube for pressure measurement in textile processing with neat sketch.
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