22239

11920

3 Hours / 70 Marks Seat No. | | | | | | | | |

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) Preferably, write the answers in sequential order.

Marks

SECTION - I

1. Attempt any FIVE of the following: **10**

a) Define the term voltage.

b) Define the term electric energy.

c) State the working principle of phase transformer.

d) State types of servo motor.

e) State uses of MI Instruments.

f) State the applications of solar electricity.

g) State the methods of energy saving in textile industry.

Marks

2. Attempt any THREE of the following: **12**

a) A circuit takes current of 8 A at 100 V, the current lagging by 30° behind the applied voltage. Calculate the values of equivalent resistance and reactance of the circuit.

b) Explain types of power with power triangle.

c) The maximum flux density in the core of 250/3000 V, 50 Hz 1-phase transformer is 1.2 Wb/m^2. If emf/turn is 8 V, determine area of core and primary and secondary turns.

d) Explain the construction of 3-phase induction motor.

e) Describe compact fluorescent lamp.

3. Attempt any THREE of the following: **12**

a) Explain Kirchhoff's current law with relevant circuit diagram.

b) Derive the emf equation for 1-phase transformer.

c) Draw three phase wiring diagram for any textile industry/workshop.

d) A 3 phase, 6 pole 50 Hz induction motor has a slip of 1% at no load, and 3% at full load Determine

(i) synchronous speed

(ii) no load speed

(iii) full load speed

(iv) frequency of rotor at standstill.

Marks

SECTION - II

4. Attempt any SIX of the following: **12**

a) List different types of resistors.

b) State the basic difference between P-type and N-type semiconductor.

c) State the specifications of capacitor.

d) List different types of optical sensors.

e) Give the applications of P-N junction diode.

f) Define operating principle of capacitive sensor.

g) Construct P-N-P transistor symbol with proper indication.

5. Attempt any THREE of the following: **12**

a) State operating principle of LVDT with neat sketch.

b) Compare between thermistor and thermocouple.

c) Utilize proper external impurity and prepare P-type and N-type semiconductor.

d) Explain working of half wave rectifier with neat sketch.

e) Write the colour code for the following using four colour band resistor.

(i) 2.2 K Ω

(ii) 230 Ω

6. Attempt any TWO of the following: **12**

a) Explain the working principle of transistor as switch with neat sketch and give application of a amplifier.

b) Make use of card auto leveller with suitable block diagram.

c) Apply bourdon tube for pressure measurement in textile processing with neat sketch.
