

22239

21819

3 Hours / 70 Marks

Seat No.

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- Instructions* – (1) All Questions are *Compulsory*.
(2) Answer each Section on separate answer sheet.
(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
- State Faraday's laws of electromagnetic induction
 - State the working principle of solar electricity
 - Why should a transformer be never connected to d.c. supply
 - Define power factor. State the value of power factor for a resistive circuit
 - State the methods of energy saving in textile industry.
 - Give any two applications of squirrel cage induction motor.
 - State the rule used to find the direction of rotation of D.C motors.

P.T.O.

2. Attempt any THREE of the following: 12

- a) Why is the efficiency of a transformer always very high?
- b) Compare three phase squirrel edge induction motor and slip ring induction motor (any four points).
- c) A resistance of 25 ohm and inductance of 0.1H are connected in series with a 230V, 50 Hz AC supply. Find the current flowing through the circuit and power dissipated in the resistance.
- d) Describe the working of a compact fluorescent lamp.
- e) Draw the three phase wiring diagram for any textile industry or workshop.

3. Attempt any THREE of the following: 12

- a) Describe the working of a PMMC instrument with neat diagram.
- b) What are the effects of change in frequency on inductive and capacitive reactance? State the formula for X_L and X_C .
- c) A three phase 400V, 6 pole, 50HZ induction motor runs at 940rpm. Calculate the synchronous speed and slip.
- d) A 50 KVA single phase transformer has a turns ratio of 300/20. The primary winding is connected to a 2200V, 50 HZ supply. Calculate:
 - (i) The secondary voltage on no load,
 - (ii) Primary and secondary currents on full load.

SECTION - II

- 4. Attempt any SIX of the following:** **12**
- a) Calculate value of resistor for given color code:
 - (i) Brown Black Red Gold
 - (ii) Yellow violet Red Silver
 - b) List different types of temperature sensors
 - c) Draw the symbol of:
 - (i) Resistor
 - (ii) Diode
 - (iii) NPN transistor
 - (iv) Capacitor
 - d) State applications of card auto leveler.
 - e) Define opto coupler with one suitable example.
 - f) List types of optical sensors
 - g) Compare Active and Passive components on the basis of:
 - (i) Definition
 - (ii) Example.
- 5. Attempt any THREE of the following:** **12**
- a) Draw and describe working principle of bourdon tube.
 - b) Draw circuit diagram of half wave rectifier and describe its working with input and output waveforms.
 - c) Draw and describe working of LED.
 - d) Draw and describe working principle of NPN transistor.
 - e) Compare P type and N type semiconductor.

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

- a) Draw and describe working of P-N junction diode in forward bias. Also draw its complete V-I characteristic and define related terms.
 - b) Draw block diagram of yarn evenness testing and describe it.
 - c) List different types of actuators and describe any one with neat sketch.
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