

17329

21819

3 Hours / 100 Marks

Seat No.

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- Instructions :**
- (1) All Questions are *compulsory*.
 - (2) Answer each Section on separate answer sheet.
 - (3) Answer each next main Question on a new page.
 - (4) Illustrate your answers with neat sketches wherever necessary.
 - (5) Figures to the right indicate full marks.
 - (6) Assume suitable data, if necessary.
 - (7) Use of Non-programmable Electronic Pocket Calculator is permissible.

Marks

Section – I

1. Attempt any FIVE of the following :

20

- (a) Define the following terms :
 - (i) Frequency
 - (ii) Phase
 - (iii) Maximum value
 - (iv) RMS value
- (b) Define voltage regulation and efficiency of transformer.
- (c) Explain with neat diagram D.O.L. starter.
- (d) List any four types of enclosures with their applications.
- (e) Write any four safety precautions to be taken to avoid electrical shocks.
- (f) Explain Universal Motor. Write any two applications of it.
- (g) State the necessity of earthing. List any two types of earthing.

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P.T.O.

2. Attempt any THREE of the following :**18**

- (a) Draw the connection diagram of Star and Delta circuit. Write the relation between line current and phase current and line voltage and phase voltage for Star and Delta connections.
- (b) Define Autotransformer. State any four applications of Autotransformer.
- (c) Explain the speed control method of 3 phase induction motor by variable frequency drive with the help of block diagram.
- (d) Write any six factors to be considered for electrical drives.

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

- (a) Define electric power and energy. State their units.
- (b) Define :
 - (i) Transformation Ratio
 - (ii) Turns Ratio
 - (iii) Voltage Ratio
 - (iv) Current Ratio
- (c) Three resistances of 25Ω each are connected in Delta across a 3 phase, 400 V, AC supply. Find :
 - (i) Phase current
 - (ii) Line current
 - (iii) Line voltage
 - (iv) Phase voltage
- (d) Draw a labelled diagram of sodium vapour lamp. Write any two applications of it.
- (e) Define Tariff. List the different types of Tariff.

Section – II**4. Attempt any FIVE of the following :****20**

- (a) Compare conductor with insulator on any four points.
- (b) Explain with block diagram regulated power supply.
- (c) Explain Transistor as a switch.
- (d) Draw the symbols of following gates :
 - (i) AND
 - (ii) OR
 - (iii) NOT
 - (iv) XOR
- (e) Explain zener diode as a voltage regulator.
- (f) Compare BJT with FET on any four points.
- (g) Draw the circuit diagram of direct coupled amplifier and show its frequency response.

5. Attempt any THREE of the following :**18**

- (a) Explain with the help of circuit diagram Hartley Oscillator. State any two applications of it.
- (b) Design basic gates using NAND and NOR gate.
- (c) State Barkhausen's criteria of oscillator. List any four applications of oscillator.
- (d) Draw the symbols of
 - (i) Zener diode
 - (ii) Photodiode
 - (iii) UJT
 - (iv) PN junction diode
 - (v) LED
 - (vi) Transistor

P.T.O.

6. Attempt any THREE of the following :

12

- (a) Define line regulation and load regulation.
 - (b) Explain Op-Amp as a subtractor.
 - (c) Convert following binary number to decimal, Hexadecimal and octal form
 $(101101.1101)_2$
 - (d) Compare CE configuration with CB configuration on any four points.
 - (e) Draw block diagram of Op-Amp and explain its important parts.
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