17329

14115

3 Hours / 100 Marks Seat No. | | | | | | | | |

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.

Marks

SECTION – I

1. Attempt any FIVE of the following: **20**

a) Define the following.

(i) Frequency

(ii) Phase

(iii) Average value

(iv) Maximum value

b) State relation between phase and line current and voltage in balanced star and delta connections.

c) Give expression for e.m.f. equation, and transformation ratio of transformer.

Marks

d) Explain with suitable diagram working of capacitor start split phase induction motor.

e) Differentiate between Fuse and MCCB. (Any four points)

f) Describe the safty tools in order to avoid shocks.

g) What is earthing? Why is it necessary?

2. Attempt any <u>THREE</u> of the following: **18**

a) With neat sketches, explain working of Auto transformer. List four specification.

b) Explain with block diagram speed control of induction motor by variable frequency drive method.

c) (i) State classification of drives.

(ii) List factors for selection of Motor for different drives.

d) Draw neat sketch and explain working of ELCB.

3. Attempt any <u>THREE</u> of the following: **12**

a) Define voltage and current with their units.

b) Three resistance of 25 Ω each are connected in delta across a 3-ϕ 400 V a.c. supply. Draw the circuit, find phase current, line current, line voltage, phase voltage.

c) Define efficiency and voltage regulation of transformer.

d) Compare squirrel cage motor with slip ring rotor of 3-phase induction motor. (Any four points)

e) What is tariff? State the types of tariff.

Marks

SECTION – II

4. Attempt any FIVE of the following: **20**

a) Define conductor and insulator with example. (any two)

b) Define intrinsic and extrinsic semiconductor with suitable example.

c) Draw block diagram of regulated power supply. State the function of each block.

d) What is rectifier? State the need of rectifier.

e) Explain the working of transistor as a switch.

f) Define oscillator. State the criterial conditions for sustained oscillations.

g) Draw symbol of NOT and XNOR gate with their truth table.

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

a) Give comparison between CB, CE and CC configuration. (six points)

b) Draw and explain two stage RC coupled amplifier. List two application.

c) Draw and explain Hartley Oscillator. State its two application.

d) What is universal gate? Design basic gates using any one of the universal gate.

Marks

6. Attempt any <u>THREE</u> of the following: **12**

a) Draw symbol of the following:

(i) PN junction diode

(ii) Zener diode

(iii) LED

(iv) UJT

b) Give comparison between BJT and FET. (Any four points)

c) Draw circuit diagram of Bridge rectifier. Explain with their waveform.

d) Draw block diagram of OP-AMP. State function of each block.

e) Convert following binary number to decimal, Hexadecimal and octal form.

$(101101.1101)_2$