17353

14115

3 Hours/ 100 Marks

Seat No. | | | | | | | | |

Instructions : *(1)* ***All*** *questions are* ***compulsory****.*
(2) Answer ***each*** *next main question on a new page.*
(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, Paper and any other Electronic Communication devices are ***not permissible*** *in Examination Hall.*

MARKS

SECTION – I

1. Attempt **any seven** of the following. **14**

i) List any four wiring accessories.

ii) Define :

a) Cycle b) Frequency of alternating quantity.

iii) State the relation between phase voltage and line voltage in 3-phase delta connection.

iv) Write working principle of PMMC instrument.

v) What is use of clip-ON meter ?

vi) Define transformation ratio and efficiency of a transformer.

vii) Write working principle of 3-ϕ induction motor.

viii) List different types of enclosures.

ix) Name different types of welding.

x) State any two factors to be considered for selection of motor for electrical drives.

P.T.O.

MARKS

2. Attempt **any four**. **12**

   i) Name the different components of electrical power system.

   ii) Explain with neat diagram working principle of M-I instrument.

   iii) Obtain an emf equation for transformer.

   iv) Explain the concept of energy conservation.

   v) Draw wiring diagram for 2 switches and 2 fans used for residential purpose.

   vi) State three applications of electrical machines used in agro system.

3. Attempt **any four**. **12**

   i) Draw neat labeled diagram of 1-phase energy meter.

   ii) Explain, working principle of transformer.

   iii) Explain, with suitable diagram 'necessity of earthing'.

   iv) Explain the working principle of capacitor start 1-phase induction motor.

   v) Explain with neat diagram working of 'ON line starter'.

   vi) A 6600 v/600 v, 50 Hz, 1-ϕ transformer has a maximum flux density of 1.35 Wb/m^2 in its core. If the net cross sectional area of iron in the core is 0.2 m^2. Calculate the no. of turns in the primary and secondary winding of the transformer.

4. Attempt **any four**. **12**

   i) Explain the operating principle of Auto-transformer.

   ii) Explain working of any one fire extinguishing method adopted in electrical fire.

   iii) State different methods of power factor improvement.

   iv) Draw neat circuit diagram of star delta starter.

   v) Explain working principle of electro plating.

   vi) Distinguish between AC and DC supply (any three).

MARKS

SECTION – II

5. Attempt **any nine** of the following. **18**

a) Define the terms – Capacitance and Inductance.

b) Write two examples of Intrinsic and Extrinsic semiconductors.

c) Draw symbol for LED and zener diode.

d) Define the terms – Conductors and Semiconductors.

e) Draw symbol for NPN and PNP transistors.

f) Write two applications of transistor.

g) What is rectifier ? Name different types of rectifier.

h) State the function of filter in power supply. Also, write different types of filter.

i) State need of voltage regulator.

j) Write AND and OR Boolean laws.

k) Draw symbol for NOR gate. Also, write its truth table.

l) List different types of display. State application of each display.

6. Attempt **any four** of the following. **16**

a) Draw construction of SCR and explain its working principle.

b) With reference to PN-junction diode, explain the terms –
   i) Barrier Potential ii) Knee Voltage.

c) Draw and explain input and output characteristic of CE amplifier.

d) With neat diagram, explain working of Bridge rectifier.

e) Compare Halfwave and Fullwave (centre tapped and bridge) rectifier by four points.

f) Draw NOT, AND, OR and NAND gates using NOR gates only.

MARKS

7. Attempt **any four** of the following. **16**

a) With neat construction, explain working principle of LED.

b) Draw V-I characteristics of zener diode. State two applications of zener diode.

c) State any four application of TRIAC.

d) List and define different types of power amplifier.

e) Explain zener diode as shunt regulator with diagram.

f) Draw symbol and truth table for the following logic gates.
   i) EX-OR and
   ii) OR.
