



17353

15162

3 Hours / 100 Marks

Seat No.

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- 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, Pager and any other Electronic Communication devices are **not** permissible in Examination Hall.*

Marks

SECTION – I

1. Attempt **any nine** of the following :

18

- a) Define the terms cycle and frequency. State their unit.
- b) State working principle of MI.
- c) State the relation between phase voltage and line voltage in 3 – ϕ star connection.
- d) What is use of clip-ON meter ?
- e) List the applications of transformer.
- f) State the necessity of earthing.
- g) Define transformation ratio and efficiency of a transformer.
- h) State the classification of drives.
- i) Define average and rms value of AC supply.
- j) List the types of enclosures.
- k) List the types of wiring accessories.
- l) State the working principle of transformer.

P.T.O.



2. Attempt **any four** of the following :

16

- a) With a neat diagram explain working of clip on ammeter.
- b) Differentiate between autotransformer and 3 phase transformer.
- c) List different types of lamps with their ratings and applications.
- d) Explain the working principle of capacitor start-1-phase induction motor.
- e) Explain in brief the electrical machines used in agro system.
- f) Draw a circuit diagram for star-delta starter of 3-ph induction motor.

3. Attempt **any four** of the following :

16

- a) For $v = 282.8 \sin 314t$ AC supply in the laboratory. Determine :
 - i) Peak value of voltage
 - ii) Frequency
 - iii) Time period.
- b) State emf equation of 1 ϕ transformer and describe load test for efficiency calculation.
- c) Draw simple electrical wiring diagram to control two lamps using switches and fuses.
- d) Differentiate between fuse and MCB.
- e) Draw constructional diagram of stator and rotor of 3 ϕ induction motor label different parts of it.
- f) List different types of electrical welding. Give any one application for each.

SECTION – II

4. Attempt **any nine** of the following :

18

- a) Define resistor and inductor with their symbols.
- b) Draw the symbols of NPN and PNP transistor.
- c) Define intrinsic and extrinsic semiconductor.
- d) Define semiconductor and insulator.
- e) Draw the symbol of zener diode and LED.
- f) List the applications of transistor.
- g) Define rectifier and filter.
- h) Draw the symbol of AND and OR gate with their truth tables.
 - i) List the types of filters.
 - j) Why NOR and NAND gate are called as universal gates.
- k) Draw the symbol of NOT and NAND gate with their truth tables.
- l) Draw the block diagram of power supply.



5. Attempt **any four** of the following :

16

- a) Draw the V-I characteristics of zener and PN junction diode.
- b) Differentiate between conductor semiconductor and insulator.
- c) Draw transistor circuit for CE configuration. Draw O/P characteristics and explain in brief saturation and active region.
- d) Draw circuit diagram of full wave bridge rectifiers. Explain in brief.
- e) State Demorgan's theorems. Prove the statement using truth table for two variables.
- f) Define forward biasing and reverse biasing of PN junction diode with the circuit diagram.

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

16

- a) With neat construction, explain working principle of LED.
 - b) Draw circuit diagram of π -type filter and explain in brief with the O/P waveforms (for full wave rectifier)
 - c) Explain zener diode as shunt regulator with diagram.
 - d) State any two application of SCR and triac each.
 - e) State the concept of power amplifier and state their types.
 - f) With neat construction, explain working principle of TRIAC.
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