



17329

15116

3 Hours / 100 Marks

Seat No.

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- Instructions :**
- (1) *All questions are compulsory.*
 - (2) *Answer **each** Section on **separate** answer book.*
 - (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.***
 - (8) *Mobile Phone, Pager and any other Electronic Communication devices are **not** permissible in Examination Hall.*

Marks

SECTION – I

1. Attempt **any five** : **20**
 - a) What is earthing ? State necessity of earthing.
 - b) Differentiate between MCCB and Fuse.
 - c) Explain with suitable diagram working of capacitor start split phase induction motor.
 - d) Define frequency, phase, average, rMS value.
 - e) State relation between phase and line current and voltage in balanced star and delta connection.
 - f) List the applications of single phase transformer and autotransformer.
 - g) Define voltage and current with their units.
2. Attempt **any three** of the following : **18**
 - a) Draw neat sketch and explain working of ELCB.
 - b) Explain with block diagram speed control of induction motor by variable frequency drive method.
 - c) Three resistance of $15\ \Omega$ each are connected in delta across a $3\ \phi$ 400 V a.c. supply. Draw the circuit, find phase current, line current, line voltage, phase voltage. Also draw the phaser diagram.
 - d) Give emf equation of transformer and state each term. Define efficiency and voltage regulation of single phase transformer.
3. Attempt **any three** of the following : **12**
 - a) What is tariff ? List the types of tariff.
 - b) State the first aid measures to be given to a person who has received electric shock.
 - c) State applications of CFL lamps.
 - d) Explain the working principle of universal motor with neat diagram.
 - e) With neat sketches, explain working of auto transformer, list four specification.

P.T.O.



SECTION – II

4. Attempt **any five** of the following : 20
- a) Compare conductor with insulator (4 points).
 - b) Draw block diagram of regulated power supply and give function of each block.
 - c) Explain transistor as a switch with ckt diagram.
 - d) Why NAND and NOR gates are known as universal gates ? Draw symbol and truth table of NAND and NOR gates.
 - e) Define intrinsic and extrinsic semiconductor.
 - f) Draw circuit diagram of bridge rectifier. Explain its working with their waveform.
 - g) Convert the following :
 - i) $(32)_{10} = (?)_2$
 - ii) $(?)_2 (99)_{10} = (?)_2$
5. Attempt **any three** of the following : 18
- a) Draw the symbols and truth table of
 - i) OR gate
 - ii) XNOR gate
 - iii) NOT gate
 - b) Draw block diagram of Op-Amp and give function of each block.
 - c) Draw the circuit diagram and explain the working of phase shift oscillator using transistor.
 - d) Draw the ckt diagram of direct coupled amplifier and show its frequency response with proper notations.
6. Attempt **any three** of the following : 12
- a) State Barkhausen's criteria of oscillations. List different applications of oscillators.
 - b) Compare CB with CE (any 4 points).
 - c) Draw the circuit of fullwave rectifier using centre tap transformed and describe its working with waveforms.
 - d) Define line regulation and load regulation.
 - e) Compare BJT with FET for four points.
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