

22310

21819

3 Hours / 70 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) Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.

Marks

SECTION - I

- 1. Attempt any SIX of the following:** **12**
- State Len'z law.
 - Define:
 - Cycle
 - Frequency
 - State alternating emf with mathematical and graphical representation.
 - Give one application each of:
 - Shaded pole motor
 - Permanent capacitor motor
 - State the equation for transformation ratio.
 - State the principle of auto transformer.
 - Classify transformer on the basis of construction.

P.T.O.

- 2. Attempt any THREE of the following:** **12**
- a) State:
 - (i) Self induced emf and
 - (ii) Mutual induced emf with necessary equations and neat diagram.
 - b) Draw power triangle. Write equations for different powers in power triangle.
 - c) Explain construction of single phase AC motor with working principle.
 - d) Draw constructional figure of transformer. Write material used for core and winding.
- 3. Attempt any TWO of the following:** **12**
- a) Compare magnetic and electric circuit with any six points.
 - b) A capacitor of $30 \mu\text{f}$ is connected in series with resistor of 120Ω . The circuit supplied with AC supply of 230 V , 50 Hz . Determine:
 - (i) Capacitive reactance
 - (ii) Impedance
 - (iii) Current
 - (iv) Circuit power
 - (v) Power factorDraw circuit diagram.
 - c) Derive emf equation of transformer. State effect of frequency of supply on working of transformer.

SECTION - II

- 4. Attempt any FIVE of the following: 10**
- a) Calculate following resistor using colour coding:
 - (i) Brown Black Red Silver
 - (ii) Red Orange Black Gold
 - b) Draw circuit for:
 - (i) Ideal voltage source
 - (ii) Practical voltage source
 - c) Draw symbol for:
 - (i) P-N junction diode
 - (ii) Light Emitting Diode
 - d) Draw full wave rectifier with zener diode as a voltage regulator.
 - e) Draw reverse characteristics of zener diode.
 - f) Draw diagram showing CB configuration of transistor.
- 5. Attempt any THREE of the following: 12**
- a) Differentiate active and passive electronic components on any four points.
 - b) Classify:
 - (i) Resistors
 - (ii) Capacitors with general specifications.
 - c) Related to P-N junction diode:
 - (i) Draw symbol
 - (ii) Draw forward characteristic
 - (iii) Give direction of current
 - (iv) Give one application
 - d) Explain operation of transistor as a switch with neat circuit diagram.

6. Attempt any TWO of the following:**12**

- a) (i) Compare analog integrated circuit with digital integrated circuit.
 - (ii) Draw sinusoidal wave with magnitude 12 V and frequency 50 Hz with time domain representation denoting magnitude and time period in t seconds.
 - b) (i) Compare rectifiers on the basis of PIV, ripple factor, efficiency.
 - (ii) Draw circuit of π filter. Also draw its input and output waveforms.
 - c) (i) Draw input and output characteristics for CE configurations.
 - (ii) Derive the relationship between alpha (α) and beta (β).
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