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25226

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

Marks

1. Attempt any FIVE of the following :

10

- (a) Define the term : (i) Reluctance (ii) Magnetic Flux density
- (b) State Faraday's law of electromagnetic induction.
- (c) Write any two applications of Fuse.
- (d) State the significance of power factor.
- (e) Write any two advantages of AC over DC.
- (f) Define : (i) Form factor
(ii) Peak factor
- (g) Suggest suitable motor for following applications :
 - (i) Food Mixer
 - (ii) Electric Fan



- 2. Attempt any THREE of the following : 12**
- (a) Explain with neat diagram series and parallel magnetic circuit.
 - (b) State the concept of lagging and leading phase.
 - (c) State the types of stepper motor and explain working of any one type of stepper motor.
 - (d) Write any four IE Rules relevant to earthing.
- 3. Attempt any THREE of the following : 12**
- (a) Explain self induced emf and mutually induced emf with neat sketch.
 - (b) List out main parts of DC motors and give the functions of any two parts.
 - (c) Write any two applications of the following Motors :
 - (i) Universal Motor
 - (ii) Linear Induction Motor
 - (d) Explain working operation of Fuse with neat diagram. List out various types of Fuse.
- 4. Attempt any THREE of the following : 12**
- (a) For purely resistive circuit :
 - (i) Draw neat sketch
 - (ii) Draw waveform for current & voltage
 - (iii) Write equation of current
 - (iv) Draw vector diagram.
 - (b) A 2000/200 V, single phase, 50 Hz transformer has the maximum flux of 30 mwb. Find out the no. of turns on primary and secondary winding if cross-sectional area of the core is 1.1 cm^2 .
 - (c) Compare variable reluctance motor & permanent magnet step motors.
 - (d) Explain importance of earthing.
 - (e) Write any two applications of each of the following : (i) MCCB (ii) ELCB

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

- (a) (i) Compare electric & magnetic circuit
- (ii) Compare statically induced emf & dynamically induced emf.
- (b) Explain working principle of a pulse transformer and write any two advantages of pulse transformer.
- (c) Draw & explain principle of working of single phase induction motor with its operation and give the types of single phase induction motor.

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

- (a) An alternating current given by equation $i = 142.14 \sin 628 t$.
Find :
 - (i) Maximum value
 - (ii) time period
 - (iii) RMS value
 - (iv) Average value
 - (v) Form factor
 - (vi) Peak factor
 - (b) Draw schematic representation of (i) DC series motor (ii) DC shunt motor (iii) DC compound motor
 - (c) (i) Draw Delta connected load. State relation between
 - (1) Line voltage & phase voltage
 - (2) Line current & phase current.
 - (ii) Write any two applications of 3 phase AC circuit.
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