22215

11819

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

Marks

1. Attempt any FIVE of the following: **10**

a) Define Reluctance. What is its units?

b) Write any two advantages of AC over DC.

c) Draw the waveform representation of a three phase AC supply with neat labels.

d) Define the transformation ratio of a transformer.

e) Draw neat constructional sketch of shell type transformer.

f) State the types of single phase induction motors.

g) List the types of Fuses.

Marks

2. Attempt any THREE of the following: **12**

a) Explain self induced emf and mutually induced emf with neat sketch.

b) Explain the generation of single phase AC supply by an elementary alternator with neat sketch.

c) Draw neat constructional sketch of auto transformer. State its advantages and applications.

d) State four advantages of poly-phase circuit over single phase circuit.

3. Attempt any THREE of the following: **12**

a) Compare magnetic circuit and electric circuit on any four points.

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 windings if the cross sectional area of the core is 1.1 cm^2.

c) Draw schematic representation of capacitor. Start capacitor run induction motor. Also state its applications.

d) Explain pipe earthing with a neat labelled diagram.

4. Attempt any THREE of the following: **12**

a) Explain B-H curve and draw with all parameters.

b) Compare two winding transformer and auto transformer. (Any four points)

c) Explain principle of operation of universal motor with neat diagram.

d) Write any two applications of following motors -

(i) Universal motor

(ii) Stepper motor

e) State the function of the fuse and material used for fuse.

Marks

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

a) An alternating current given by equation $i = 142.14 \sin 628t$. find -

(i) Maximum value

(ii) Time period

(iii) RMS value

(iv) Average value

(v) Form factor

(vi) Peak factor

b) Three impedance, each of $10\,\Omega$ resistance and $5\,\Omega$ inductive reactance in series, are connected in star across a 3 phase, 400 V, 50 Hz AC supply. Determine -

(i) Phase current

(ii) Line current

(iii) Phase voltage

(iv) Line voltage

(v) Power factor

(vi) Total line power

c) Draw schematic representation of -

(i) DC shunt motor

(ii) DC series motor

(iii) DC compound motor

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

a) Explain the working principle of stepper motor and explain any one type with neat sketch.

b) Explain the need of earthing in electrical systems. State the types of earthing and any two advantages of earthing.

c) Explain with neat diagram, operation of ELCB and two applications.