22310

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) Assume suitable data, if necessary.

(6) Use of Non-programmable Electronic Pocket Calculator is permissible.

SECTION - A

Marks

1. Attempt any SIX of the following : **12**

(a) Define permeability.

(b) Define MMF.

(c) Define form factor of an alternating quantity.

(d) Define frequency and time period of an alternating quality.

(e) Define transformation ratio of transformer.

(f) State the EMF equation of a 1ϕ transformer and state the meaning of each term used.

(g) Give two applications of single phase motors.

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

(a) Draw and explain B – H curve.

(b) Draw a balanced 3-phase star connected load. Show various line and phase values and also state the relationship between them.

(c) Explain the working principle of 1ϕ transformer.

(d) Explain the working principle of 1ϕ motor with a neat diagram.

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

(a) State and explain Faraday's laws of electromagnetic Induction.

(b) An inductance of 0.1H and a resistance of 50Ω are connected in series across a 220 V, 50 Hz AC supply.

Determine : (i) Impedance (ii) Current (iii) Power factor (iv) Power Consumed

(c) Derive the EMF equation of a 1ϕ transformer.

SECTION - B

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

(a) Define Active component. Give two examples.

(b) Draw the symbol of PN-junction diode and give two applications.

(c) Draw the symbols of PNP and NPN transistor.

(d) Define PIV.

(e) Draw the symbol of ideal voltage source and ideal current source.

(f) Define α and β of a transistor.

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

(a) Define amplitude and phase of a sinusoidal quantity.

(b) Explain the constructional details of LED.

(c) Explain zener diode as a voltage regulator.

(d) Find the value of resistor from the given colour code :

(i) Red Red Red Gold

(ii) Blue Orange Green Silver

(e) Explain with neat diagram how transistor can be used as a switch.

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

(a) Differentiate between analog and digital ICs.

(b) Explain the working of half wave rectifier with suitable diagram.

(c) Draw the diagram of transistor operating regions.
