# 22310

22223 3 Hours /	70	Marks Seat No.	
Instructions –	(1) (2)	All Questions are <i>Compulsory</i> . Answer each section on separate answer book	
	(4)	Figures to the right indicate full marks.	
	(5)	Assume suitable data, if necessary.	
	(6)	Use of Non-programmable Electronic Pocket Calculator is permissible.	
	(7)	Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.	;
			Marks
		SECTION - I	

#### 1. Attempt any <u>SIX</u> of the following:

- a) Define permeability and reluctance.
- b) Draw power triangle for AC circuit.
- c) Define RMS value and average value.
- d) State the relation between time period and frequency. Calculate time period for 60Hz frequency.
- e) List the application of single phase induction motor (any four)
- f) List the different types of transformer.
- g) List two applications of auto transformer.

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Marks

# 2. Attempt any THREE of the following:

- a) Compare electric circuit and magnetic circuit on any four points.
- b) Derive emf equation of single phase transformer.
- c) An alternating current is represented by  $i = 50.5 \sin \left(314t + \frac{\pi}{2}\right)$ Calculate
  - i) Amplitude of current
  - ii) Frequency
  - iii) Phase difference
  - iv) RMS value of current
- d) State four major parts of transformer and give material used for each.

#### 3. Attempt any TWO of the following:

- a) Related to electormagnetic induction
  - i) Define Faraday's both laws.
  - ii) Define self and mutually induced emf
  - iii) State equations of self and mutual inductance.
- b) List any four types of single phase AC motor. Draw neat circuit of any one type. Explain its working.
- c) Draw RL series circuit. Draw waveform and phasor diagram for the same. Write equation of current, voltage and power for this circuit.

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### **SECTION - II**

## 4. Attempt any <u>FIVE</u> of the following:

- a) Compare active and passive components (two points)
- b) Draw symbols of zener diode and LED.
- c) List types of BJI and draw their symbols.
- d) List specifications of resistors
- e) Define rectifier. List different types of rectifiers.
- f) State the applications of BJT.
- g) State any four applications of LED.

#### 5. Attempt any THREE of the following:

- a) Find the value of resistor from the given colour code.
  - i) Orange, Orange, Orange, Silver
  - ii) Green, Blue, Yellow, Silver
- b) Draw and explain working principle of half wave rectifiers and draw its waveforms.
- c) Draw constructional diagram of LED and explain its working principle.
- d) Explain ideal and practical voltage source with suitable diagram.
- e) Compare CB, CC and CE configuration of transistor. (four points)

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#### 6. Attempt any TWO of the following:

- a) i) Differentiate between analog and digital ICS
  - ii) List different types of resistors and capacitors.
- b) i) Define filter and state it's type.
  - ii) Draw and explain 'C' filter with suitable diagram.
- c) i) Define the following parameter of transistor
  - 1) α
  - 2) β
  - 3) Input resistance
  - ii) Describe the working of transistor as a switch.