22310

21819

3 Hours / 70 Marks Seat No. | | | | | | | | |

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**

a) State Len'z law.

b) Define:

(i) Cycle

(ii) Frequency

c) State alternating emf with mathematical and graphical representation.

d) Give one application each of:

(i) Shaded pole motor

(ii) Permanent capacitor motor

e) State the equation for transformation ratio.

f) State the principle of auto transformer.

g) Classify transformer on the basis of construction.

Marks

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 μf is connected in series with resistor of 120 Ω. The circuit supplied with AC supply of 230 V, 50 Hz. Determine:

(i) Capacitive reactance

(ii) Impedance

(iii) Current

(iv) Circuit power

(v) Power factor

Draw circuit diagram.

c) Derive emf equation of transformer. State effect of frequency of supply on working of transformer.

Marks

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.

Marks

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).
