

Scheme – I
Sample Question Paper

Program Name : Mechanical and Chemical Engineering Program Group
Program Code : CH/AE/FG/ME/PG/PT
Semester : Second
Course Title : Electrical & Electronics Technology
Marks : 70

22232

Time: 3 Hrs.

Instructions:

- (1) All questions are compulsory.
- (2) Illustrate your answers with neat sketches wherever necessary.
- (3) Figures to the right indicate full marks.
- (4) Assume suitable data if necessary.
- (5) Preferably, write the answers in sequential order.

SECTION A

Q.1) Attempt any SIX of the following.

12 Marks

- a) Define Power and Energy.
- b) Define: (i) MMF (ii) Leakage factor.
- c) Draw impedance triangle and show the quantities on it.
- d) Define power factor and write the mathematical formula for it.
- e) State the difference between step up and step down transformer.
- f) Define FHP Motor.
- g) Give the classification of single phase induction motor.

Q.2) Attempt any THREE of the following.

12 Marks

- a) Define: (i) Flux density (ii) MMF (iii) Permeability and (iv) Reluctance.
- b) Draw and explain series R-L circuit.
- c) Derive an EMF equation of single phase transformer.
- d) Explain working of autotransformer. State its any two applications.

Q.3) Attempt any TWO of the following.

12 Marks

- a) Draw and explain B-H curve.

- b) A sinusoidal voltage with equation $v=173 \sin (314t- 30^0)$ Volt is applied to a load. Calculate: (i) Maximum Voltage (ii) RMS Voltage (iii) Frequency (iv) Time Period (v) Phase and (vi) Angular Frequency.
- c) A 1-Phase, 1 kVA, 230/115V transformer is used in a laboratory. Calculate: (i) Primary winding current (ii) Secondary winding current (iii) Turns Ratio and (iv) Current Ratio.

SECTION B

Q.4) Attempt any FIVE of the following. 10 Marks

- a) State the difference between active and passive electronic components.
- b) Compare analog and digital ICs.
- c) List the different types of rectifiers.
- d) Draw block diagram of regulated power supply.
- e) List the different unipolar and bipolar devices.
- f) Draw the symbol of PNP and NPN transistor.

Q.5) Attempt any THREE of the following. 12 Marks

- a) Find the resistor value from the given color code:
 - (i) Red, Blue, Yellow, Gold
 - (ii) Brown, Black, Brown, Gold
- b) Compare half wave rectifier and full wave rectifier on the basis of: (i) Number of diodes used (ii) Rectification efficiency (iii) Voltage regulation (iv) Circuit diagram.
- c) Explain the transistor as switch and amplifier.
- d) Explain ideal voltage source with suitable diagram.

Q.6) Attempt any TWO of the following. 12 Marks

- a) Explain the following signals with neat sketches:
 - (i) Sinusoidal (ii) Triangular (iii) Square.
- b) List the various types of diode and differentiate between P-N junction diode and Zener diode.
- c) Explain the Common Emitter (CE) configuration of bipolar junction transistor with input and output characteristics.

Scheme – I
Sample Test Paper - I

Program Name : Mechanical and Chemical Engineering Program Group
Program Code : CH/AE/FG/ME/PG/PT
Semester : Second
Course Title : Electrical & Electronics Technology
Marks : 20

22232

Time: 1 Hour

Instructions:

- (1) All questions are compulsory.
- (2) Illustrate your answers with neat sketches wherever necessary.
- (3) Figures to the right indicate full marks.
- (4) Assume suitable data if necessary.
- (5) Preferably, write the answers in sequential order.

SECTION A

Q.1) Attempt any TWO of the following. **04 Marks**

- a) State the Faraday's laws of electromagnetic induction.
- b) Define phase angle and power factor.
- c) Write the equations of self and mutual inductance.

Q.2) Attempt any TWO of the following. **06 Marks**

- a) Compare electric circuit and magnetic circuit on any three points.
- b) Explain statically and dynamically induced emf.
- c) A sinusoidal voltage with equation $v=70.7 \sin 314t$ Volt is applied to a load.

Calculate: (i) Maximum Voltage (ii) RMS Voltage (iii) Frequency

SECTION B

Q.3) Attempt any TWO of the following. **04 Marks**

- a) State the difference between active and passive electronic components.
- b) List the different types of voltage and current sources.
- c) Draw the circuit diagram for P-N junction diode.

Q.4) Attempt any TWO of the following. **06 Marks**

- a) Find the resistor value from the given color code:
 - (i) Yellow, Violet, Red, Gold
 - (ii) Brown, Black, Brown, Gold
- b) Compare half wave rectifier and full wave rectifier on the basis of:
 - (i) Number of diodes used (ii) Rectification efficiency (iii) Voltage regulation
- c) Explain ideal voltage source with suitable diagram.

Scheme – I
Sample Test Paper - II

Program Name : Mechanical and Chemical Engineering Program Group
Program Code : CH/AE/FG/ME/PG/PT
Semester : Second
Course Title : Electrical & Electronics Technology
Marks : 20

22232

Time: 1 Hour

Instructions:

- (1) All questions are compulsory.
- (2) Illustrate your answers with neat sketches wherever necessary.
- (3) Figures to the right indicate full marks.
- (4) Assume suitable data if necessary.
- (5) Preferably, write the answers in sequential order.

SECTION A

Q.1) Attempt any TWO of the following. **04 Marks**

- a) Write the voltage and current relationship in star connection.
- b) State the working principle of transformer.
- c) List the various types of FHP motors.

Q.2) Attempt any TWO of the following. **06 Marks**

- a) Draw and explain series R-C circuit.
- b) Describe the various types of losses taking place in transformer.
- c) Explain the working of autotransformer.

SECTION B

Q.3) Attempt any TWO of the following. **04 Marks**

- a) State the need of filter and also state its types.
- b) Draw the symbol of PNP and NPN transistor.
- c) List the different unipolar and bipolar devices.

Q.4) Attempt any TWO of the following. **06 Marks**

- a) Explain the regulated power supply with suitable block diagram.
- b) Explain the input and output characteristics of Common Emitter (CE) configuration of transistor.
- c) Derive the relation between alpha and beta of transistor.