Scheme – I

Sample Question Paper

Program Name : Mechanical & Automobile Engineering

Program Code : ME / AE

Semester : Third

Course Title : Basic Electrical & Electronics Engineering

Marks : 70

22310

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 Magnetic circuit.

 b) Define: (i) Permeability (ii) Reluctance

 c) Define RMS value and average value with respect to sinusoidal ac waveform.

 d) Draw sinusoidal waveform and show the various quantities associated with it.

 e) State the working principle of 1-phase transformer.

 f) Write EMF equation of transformer. State the meaning of each notation in it.

 g) Define FHP motor.

Q.2) Attempt any THREE of the following. **12 Marks**

 a) Compare Electric Circuit and Magnetic Circuit on the basis of: (i) Definition (ii) Relation between flux and current (iii) Analogy and (iv)Diagram.

 b) Draw a balanced 3-phase delta connected load. Show various line and phase quantities on it. Also write relationship between line and phase values of voltages and currents.

 c) Explain the construction and working principle of transformer.

 d) Explain working of autotransformer. State it's any two applications.

Q.3) Attempt any TWO of the following.   **12 Marks**

    a) Explain with neat diagram statically and dynamically induced EMF.

    b) A capacitance of 20 µF and a resistance of 100 Ω are connected in series across a 230V, 50 Hz supply mains. Determine: (i) Capacitive reactance (ii) Angular frequency (iii) impedance and (iv) Current. (v) Circuit Power. Draw circuit diagram.

    c) Derive an EMF equation of single phase transformer.

SECTION B

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

    a) List different types of electronic components with example.

    b) Define PIV and ripple factor.

    c) State the applications of BJT.

    d) List different types of resistor and capacitor.

    e) Define filter and state its type.

    f) Draw the diagram showing the operating regions of transistor.

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

    a) Explain ideal and practical current source with suitable diagram.

    b) (i) Explain the construction of LED.

      (ii) List different types of diode and draw its symbol.

    c) Explain Zener diode with V-I characteristics.

    d) Find the value of resistor from the given color code:

      (i) Orange, Red, Brown, Silver

      (ii) Green, Orange, Orange, Silver

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

    a) (i) Differentiate between analog and digital ICs.

      (ii) List different types of registers and capacitors.

    b) Explain half wave and full wave rectifier with suitable diagram.

    c) (i) Derive the relationship between alpha (α) and beta (β).

      (ii) State the different types of transistors and draw the symbols of NPN and PNP transistor.

Scheme - I

Sample Test Paper - I

Program Name : Mechanical & Automobile Engineering

Program Code : ME / AE

Semester : Third

Course Title : Basic Electrical & Electronics Engineering

Marks : 20

22310

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) Define Power and Energy.

b) State Lenz's law.

c) Define RMS value and average value with respect to sinusoidal ac waveform.

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) List the different types of electronic components with example.

b) State the different types of resistors and capacitors.

c) Define PIV and ripple factor.

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

a) Find the resistor value from the given color code:

   (i) Orange, Red, Brown, Gold

   (ii) Brown, Black, Brown, Gold

b) Compare analog and digital ICs.

c) Explain Zener diode with V-I characteristics.

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Scheme – I

Sample Test Paper - II

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Program Name	: Mechanical & Automobile Engineering	
Program Code	: ME / AE	
Semester	: Third	**22310**
Course Title	: Basic Electrical & Electronics Engineering	
Marks	: 20	**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.

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SECTION A

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

a) Draw power triangle and show various quantities on it.

b) State the working principle of transformer.

c) List the various types of single phase motors.

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

a) Draw and explain series R-L circuit.

b) Derive an EMF equation of single phase transformer.

c) Explain the working of single phase AC motor.

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SECTION B

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

a) Draw the symbol of LED and State any two applications of it.

b) Draw the symbol of BJT and write the working principle of it.

c) Show the various operating regions with suitable diagram.

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

a) Compare of half wave and full wave rectifier on any three points.

b) Explain the transistor as switch.

c) Derive the relation between alpha and beta of transistor.