B.Tech. (Sem. - 1ˢᵗ / 2ⁿᵈ)
BASIC ELECTRICAL & ELECTRONICS ENGINEERING
SUBJECT CODE : EE - 101 (2K4 & Onwards)
Paper ID : [A0117]

[**Note :** Please fill subject code and paper ID on OMR]

Time : 03 Hours

Maximum Marks : 60

Instruction to Candidates:

1) Section - A is **Compulsory**.

2) Attempt any **Five** questions from Section - B & C.

3) Select atleast **Two** questions from Section - B & C.

Section - A

Q1) (Marks : 2 each)

a) Define Average value of a sinusoidal wave.

b) What is leakage coefficient? Give its effect in magnetic circuit.

c) Which dc motor is used for traction purpose and why?

d) Differentiate between squirrel cage & slip ring induction motor.

e) State working principle of induction type instruments.

f) Define Hall's effect and give its applications.

g) Draw turn off characteristics of thyristor.

h) State salient features of zener diode.

i) Convert the decimal number 39.75 to octal.

j) What is XOR gate? Draw its truth table.

(Marks : 8 each)

Q2) (a) How does the resistance of metals and semiconductors vary with temperature? What is the significance of a negative temperature coefficient?

(b) State and explain Kirchoff's laws.

Q3) (a) Discuss various characteristics of a series RLC resonant circuit. Derive mathematical expressions in support of your discussion.

(b) A series circuit consists of a 115 Ω resistor, a 0.024 μF capacitor and coil of inductance L. If the resonant frequency of the circuit is 1000 Hz, determine inductance and bandwidth.

Q4) (a) Define the coefficient of inductance. Obtain an expression for the force between two parallel conductors carrying currents.

(b) With the help of a neat diagram discuss various parts of dc machine.

Q5) Describe with constructional details the principle and working of a moving coil permanent magnet type ammeter. What type of control and damping are used in this instrument? Draw neat sketches to illustrate your answer.

Section - C

(Marks : 8 each)

Q6) (a) Define gauge factor. Explain why semiconductor strain gauges have high values for the gauge factor.

(b) Discuss the working principle, frequency response and applications of piezoelectric transducers.

Q7) (a) Discuss the operation of n-channel JFET and plot its drain characteristics. Define pinch off voltage.

(b) Briefly compare the turn on methods of thyristors.

Q8) (a) What is importance of integrated circuit? Classify the different types of IC's.

(b) What is the need of voltage regulator in a power supply? Discuss the applications of voltage regulator IC 7805.

Q9) (a) What are the Universal gates? Why are they so called?

(b) What is JK flip flop? Discus its working. What is race around condition?