

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY GURAJADA VIZIANAGARAM
I B. Tech II Semester Supplementary Examinations January-2025

Basic Electrical & Electronics Engineering

(Common to CSE, IT, CSE(DS), CSE(AI), CSE(CS), CSE(AI&ML), AI&DS, AI&ML)

Time: 3 hours

Max. Marks: 70

Question paper consists of Part A & Part B.
Part A is compulsory, Answer all questions.
In Part B, Answer any one question from each unit.

PART-A**(10 Marks)****Basic Electrical Engineering**

- 1
 - a) Distinguish between Conductance and Resistance [1]
 - b) State and explain Super position theorem [1]
 - c) Distinguish between a DC Generator and Motor [1]
 - d) Explain the working principle of an Alternator or three phase Generator [1]
 - e) Distinguish between conventional and Non-Conventional Energy resources [1]

Basic Electronics Engineering

- f) List the characteristics of Semiconductors [1]
- g) Distinguish between Intrinsic and Extrinsic Semiconductors [1]
- h) Draw the block diagram of public address system [1]
- i) Draw the V- I characteristics of a P-N Junction Diode [1]
- j) Convert 101010101 to decimal [1]

PART-B**(60 Marks)****Basic Electrical Engineering****Unit-1**

- 2 Find the current in each resistance of the following circuit as shown in Figure.1. [10]

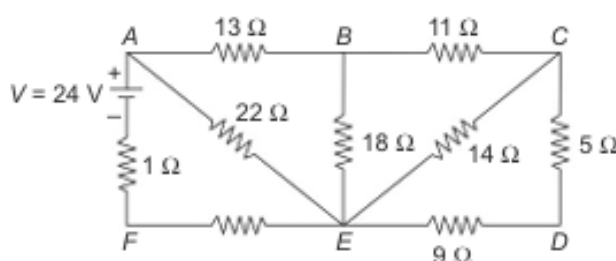


Figure:1

(OR)

- 3
 - a) Explain the following terms with respect to AC circuits: [5]
 - i) Phase difference ii) RMS Value iii) Form factor
 - b) A coil having a resistance of $24\ \Omega$ and an inductance of $0.2\ \text{H}$ is connected across a $200\ \text{V}$, $50\ \text{Hz}$ supply. Calculate the (i) reactance and impedance of the coil, (ii) current, (iii) phase difference between the current and the applied voltage, and (iv) power factor. [5]

Unit-2

- 4 a) What is a transformer? Explain the function it fulfils as an element of a power system. [5]
b) Explain the working of a Three Phase induction motor. [5]
(OR)
- 5 a) Analyze the constructional aspects of a DC Machine? [5]
b) Explain the working of a permanent magnet moving coil (PMMC) meter with a neat diagram. [5]

Unit-3

- 6 a) Draw and explain the layout of a Hydel Power Plant. [5]
b) What is a Two -part tariff and explain it in detail. [5]
(OR)
- 7 a) Explain the working principle of a Fuse and Miniature Circuit breaker. [5]
b) List the precautions to be taken to avoid Electric Shock during working conditions? [5]

Basic Electronics Engineering

Unit-1

- 8 a) Explain in detail about N - Type Semiconductor and P - Type Semiconductor. [5]
b) Describe the performance / operation of a Zener Diode and list its applications? [5]
(OR)
- 9 a) Explain about the potential barrier and biasing of p-n Junction Diode along with necessary diagrams and characteristics. [5]
b) Illustrate the working of a P-N-P transistor with a neat diagram? [5]

Unit-2

- 10 a) Explain in detail about the common collector configuration. [5]
b) Explain about the regulated dc power Supply with a neat block diagram. [5]
(OR)
- 11 a) Describe the operation of a Full Wave bridge rectifier with a neat circuit and corresponding waveforms? [5]
b) Explain how Zener diode can be used as a Voltage regulator. [5]

Unit-3

- 12 Explain the functionality of the following Logic Gates: [10]
i) XOR Gate ii) NOR Gate iii) NAND Gate
iv) XNOR gate v) AND Gate
(OR)
- 13 a) Describe the following combinational circuits: [5]
i) half adder and ii) Full adder
b) Explain any one flip flop circuit with a neat diagram and corresponding truth table. [5]
