| O.P.Code:23EE0201a | R23 | H.T.No. | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|

**SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR**
(AUTONOMOUS)
**B.Tech. I Year I Semester Regular & Supplementary Examinations December/January-2024/2025**
**BASIC ELECTRICAL & ELECTRONICS ENGINEERING**
**(Electronics & Communications Engineering)**

**Time: 3 Hours** **Max. Marks: 70**

***Note:** Answer **PART-A** from pages **2 to 20** and **PART-B** from **21 to 39.**

## PART-A (ELECTRICAL)

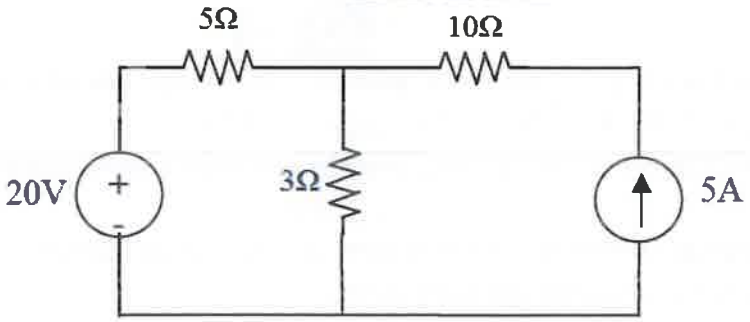
(Answer all the Questions **5 x 1 = 5** Marks)

| | | | | | |
|---|---|---|---|---|---|
| 1 | a | State Kirchoff's laws. | CO1 | L1 | 1M |
| | b | Define Impedance. | CO2 | L1 | 1M |
| | c | Write any three applications of a DC Motor. | CO3 | L3 | 1M |
| | d | What are the Conventional Energy sources? | CO3 | L1 | 1M |
| | e | What are the different types of Earthing? | CO3 | L1 | 1M |

**(Answer all Three Units 3 x 10 = 30 Marks) (ELECTRICAL)**

**UNIT-I**

| | | | | | |
|---|---|---|---|---|---|
| 2 | a | State the Super position theorem. | CO2 | L1 | 5M |
| | b | By using superposition theorem find the current flowing through the 3 ohm resistor. | CO2 | L2 | 5M |




**OR**

| | | | | | |
|---|---|---|---|---|---|
| 3 | a | Define the following<br>i)Waveform, ii) Time period, iii) frequency, iv) Amplitude | CO2 | L1 | 5M |
| | b | What are the equations of AC Voltage and Current | CO2 | L1 | 5M |

**UNIT-II**

| | | | | | |
|---|---|---|---|---|---|
| 4 | | Explain about the Working principle of a DC generator.. | CO1 | L2 | 10M |

**OR**

| | | | | | |
|---|---|---|---|---|---|
| 5 | a | Explain the operating principles of Moving Iron instruments | CO1 | L2 | 5M |
| | b | Determine the unknown resistance using Wheatstone bridge | CO3 | L3 | 5M |

**UNIT-III**

| | | | | | |
|---|---|---|---|---|---|
| 6 | | Explain the Layout and operation of Hydel power generating station | CO3 | L5 | 10M |

**OR**

| | | | | | |
|---|---|---|---|---|---|
| 7 | a | What is pipe earthing? explain briefly | CO3 | L2 | 6M |
| | b | What are the advantages of earthing? | CO3 | L1 | 4M |

## PART-B(ELECTRONICS)

(Answer all the Questions **5 x 1 = 5** Marks)

| | | | | | |
|---|---|---|---|---|---|
| **1** | **f** | Define doping | **CO1** | **L1** | **1M** |
| | **g** | What is a step-down transformer? | **CO2** | **L3** | **1M** |
| | **h** | What is an emitter? | **CO2** | **L1** | **1M** |
| | **i** | What is an Excess3 code? | **CO3** | **L1** | **1M** |
| | **j** | Write the names of basic logical operators. | **CO4** | **L3** | **1M** |

**(Answer all Three Units 3 x 10 = 30 Marks) (ELECTRONICS)**

**UNIT-IV**

| | | | | | |
|---|---|---|---|---|---|
| **8** | **a** | Define Zener diode and its characteristics | **CO1** | **L1** | **5M** |
| | **b** | What is Zener effect? | **CO1** | **L2** | **5M** |

**OR**

| | | | | | |
|---|---|---|---|---|---|
| **9** | | With the neat sketch ,Explain the operation of an NPN transistor and PNP transistor. | **CO1** | **L5** | **10M** |

**UNIT-V**

| | | | | | |
|---|---|---|---|---|---|
| **10** | | What is a Voltage Regulator? How the Zener Diode works as a Voltage Regulator? | **CO2** | **L1** | **10M** |

**OR**

| | | | | | |
|---|---|---|---|---|---|
| **11** | | Explain briefly about the following:<br>i).A step down transformer ii).A rectifier<br>iii).A DC filter iv).A regulator | **CO2** | **L2** | **10M** |

**UNIT-VI**

| | | | | | |
|---|---|---|---|---|---|
| **12** | **a** | Convert the following into binary to decimal, decimal into hexa decimal i)$(1101.1)_2$ ii) $(1100.001)_2$ iii) $(5386.34)_{10}$ iv) $(214.35)_{10}$ | **CO3** | **L3** | **7M** |
| | **b** | Convert the $(555)_{10}$ into binary, octal and Hexadecimal number systems. | **CO3** | **L3** | **3M** |

**OR**

| | | | | | |
|---|---|---|---|---|---|
| **13** | **a** | Explain differences between combinational and sequential circuits. | **CO3** | **L5** | **5M** |
| | **b** | Perform the following addition using excess-3 code<br>**i)386+756 ii)12+38** | **CO3** | **L4** | **5M** |

***** END *****