

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR
(AUTONOMOUS)

B.Tech I Year II Semester Supplementary Examinations December-2025

BASIC ELECTRICAL AND ELECTRONICS ENGINEERING

Common to (CE, ME, CAD, CSM, CCC, CIC, CAI, CIA)

Time: 3 Hours

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

Max. Marks: 70

PART-A (ELECTRICAL)

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

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|-----|--|-----|----|----|
| 1 a | State ohm's law | CO1 | L1 | 1M |
| b | Define Impedance. | CO1 | L1 | 1M |
| c | List any Five parts of a Transformer. | CO2 | L1 | 1M |
| d | Write any three applications of a DC Motor | CO1 | L1 | 1M |
| e | What is the function of Fuse? | CO3 | L1 | 1M |

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

UNIT-I

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|-----|--|-----|----|----|
| 2 a | Explain about Electrical circuit elements. | CO4 | L2 | 5M |
| b | State and explain Kirchhoff's laws. | CO1 | L1 | 5M |

OR

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|-----|---|-----|----|----|
| 3 a | What are the equations of AC Voltage and Current. | CO2 | L1 | 2M |
| b | Define the following
i) Waveform, ii) Time period, iii) frequency, iv) Amplitude | CO2 | L1 | 8M |

UNIT-II

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|---|---|-----|----|-----|
| 4 | What is the working principle of dc motor? explain clearly. | CO1 | L1 | 10M |
|---|---|-----|----|-----|

OR

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|-----|--|-----|----|----|
| 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

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|---|---|-----|----|-----|
| 6 | What is solar power plant? Explain the operation with layout. | CO3 | L1 | 10M |
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OR

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|-----|--|-----|----|----|
| 7 a | What are the working principles of fuse and MCB? | CO1 | L1 | 4M |
| b | Define Earthing and explain the types of earthing. | CO4 | L1 | 6M |

PART-B (ELECTRONICS)

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

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|-----|--|-----|----|
| 1 f | How PN diode is formed? | CO1 | L1 |
| g | Define amplifier. | CO2 | L4 |
| h | What is a step-down transformer? | CO2 | L3 |
| i | Write the names of basic logical operators. | CO4 | L3 |
| j | List the names of universal gates with symbols | CO3 | L4 |

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

UNIT-IV

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| 8 | Explain the operation of pn junction diode under forward bias and reverse bias conditions with the help of V-I characteristics curve. | CO1 | L5 | 10 |
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OR

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|---|--|-----|----|----|
| 9 | With a neat sketch Explain the input and output and current gain characteristics of a transistor in common Emitter (CE) configuration. | CO2 | L1 | 10 |
|---|--|-----|----|----|

UNIT-V

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|----|---|-----|----|----|
| 10 | Explain the Block diagram description of a dc power supply with a detailed explanation of all blocks. | CO2 | L1 | 10 |
|----|---|-----|----|----|

OR

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|----|--|-----|----|----|
| 11 | Draw the block diagram of Public Addressing System and explain the function of each block. | CO2 | L1 | 10 |
|----|--|-----|----|----|

UNIT-VI

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|------|---|-----|----|---|
| 12 a | What is number system? explain the different types of number systems | CO3 | L2 | 5 |
| b | Convert the $(555)_{10}$ into binary, octal and Hexadecimal number systems. | CO3 | L1 | 5 |

10. OR

- | | | | | |
|----|---|-----|----|----|
| 13 | Define combinational circuit? Explain Half Adder and Full Adder with truth table. | CO3 | L2 | 10 |
|----|---|-----|----|----|

*** END ***