

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

B.Tech I Year I Semester Regular Examinations July-2021

BASIC ELECTRONICS ENGINEERING

[Common to CSE, CSIT, CSE (AI & ML) & CSE (IOT & CS including BCT)]

Time: 3 hours

Max. Marks: 60

(Answer all Five Units 5 x 12 = 60 Marks)

UNIT-I

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|----------|----------|------------------------------------------------------------------|-----------|-----------|
| 1 | a | Explain the differences between P-type and N-type semiconductors | L2 | 4M |
| | b | What is meant by Acceptor energy level? | L2 | 4M |
| | c | Define the terms Drift and Diffusion current. | L1 | 4M |

OR

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|----------|----------|----------------------------------------------------------------------|-----------|-----------|
| 2 | a | Explain in detail about mass action law.0. | L2 | 6M |
| | b | State and Explain the law of electrical neutrality in semiconductor. | L2 | 6M |

UNIT-II

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|----------|----------|--------------------------------------------------------------------|-----------|-----------|
| 3 | a | Explain and derive the Transition capacitance C_T of a PN diode. | L3 | 6M |
| | b | How the zener diode can be used as a voltage regulator. | L3 | 6M |

OR

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| 4 | Plot the graph for different breakdown mechanisms in semiconductors. | L2 | 12M |
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UNIT-III

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| 5 | a | A half wave rectifier ,having a resistive load of 1000Ω ,rectifies an alternating voltage of 325V peak value and the diode has a forward resistance of 100Ω .Calculate (i)peak, average and rms value of current (ii) d.c. power output (iii) ac input power ,and (iv) efficiency of the rectifier. | L4 | 6M |
| | b | Draw the circuit diagram of FWR and explain its operation with the help of wave forms. | L2 | 6M |

OR

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|----------|----------|------------------------------------------------------------------------------------------------------------------------------|-----------|-----------|
| 6 | a | A HWR uses a diode with 50Ω internal resistance, if RMS input is 110V and $R_L=1000\Omega$ then calculate Efficiency. | L3 | 6M |
| | b | Describe the operation of inductor filter with the help of circuit diagram and waveforms. | L2 | 6M |

UNIT-IV

- 7 a What is a BJT and its symbols? Explain the construction of NPN and PNP transistors. **L1 6M**
- b Compare the performance of a transistor in different configurations. **L2 6M**

OR

- 8 a Explain the Input and Output characteristics of a BJT in CC Configuration. **L2 6M**
- b Derive the relation among α , β and γ . **L6 6M**

UNIT-V

- 9 a Explain the construction and working principle of N-channel JFET. **L2 6M**
- b Briefly explain the term pinch-off voltage using drain characteristics of JFET. **L2 6M**

OR

- 10 a List differences between depletion and enhancement MOSFET. **L4 6M**
- b Explain the different methods for fixing the Q-point in a FET. **L2 6M**

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