

Reg. No: 

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

**B.Tech III Year I Semester Supplementary Examinations December-2021**

**POWER ELECTRONICS**

**(Electrical and Electronics Engineering)**

Time: 3 hours

Max. Marks: 60

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

**UNIT-I**

- |   |   |    |    |
|---|---|----|----|
| 1 | a Explain the types of power electronic converters. | L1 | 6M |
|   | b Explain the switching characteristics of BJT.     | L2 | 6M |

OR

- |   |   |    |     |
|---|---|----|-----|
| 2 | a Explain the two transistor analogy of the thyristor with neat diagrams. | L1 | 12M |
|---|---|----|-----|

**UNIT-II**

- |   |   |    |    |
|---|---|----|----|
| 3 | a Give the difference between midpoint and bridge type converters.                      | L1 | 6M |
|   | b What is the difference between half controlled and fully controlled bridge rectifier. | L2 | 6M |

OR

- |   |   |    |     |
|---|---|----|-----|
| 4 | What are the effects of source inductance in single phase controlled rectifier? | L3 | 12M |
|---|---|----|-----|

**UNIT-III**

- |   |   |    |     |
|---|---|----|-----|
| 5 | A three phase half wave rectifier is operated from three phase star connected 208V, 60Hz supply. Load resistance =10 Ohm. If it is required to obtain an average output voltage 50 % of max possible output voltage. Calculate i) delay angle ii) rms value of output current iii) average value of output current iv) thyristor avg and rms current v) efficiency vi)TUF vii) supply power factor. | L3 | 12M |
|---|---|----|-----|

OR

- |   |  |    |    |
|---|--|----|----|
| 6 | a Give the difference between discontinuous mode and continuous mode of operation. | L2 | 6M |
|   | b Give the difference between midpoint and bridge type converters.                 | L1 | 6M |

**UNIT-IV**

- |   |  |    |     |
|---|--|----|-----|
| 7 | Briefly explain the operation of TRIAC in different modes? | L3 | 12M |
|---|--|----|-----|

OR

- |   |  |    |     |
|---|--|----|-----|
| 8 | Explain the principle of operation of single phase to single phase step-up midpoint cyclo converter? | L3 | 12M |
|---|--|----|-----|

**UNIT-V**

- |   |  |    |    |
|---|--|----|----|
| 9 | a Describe the principle of chopper operation.     | L1 | 6M |
|   | b List out various control strategies for chopper. | L1 | 6M |

OR

- |    |  |    |    |
|----|--|----|----|
| 10 | a What is series inverter? Explain it with neat circuit diagram. | L2 | 8M |
|    | b List some applications of dc chopper.                          | L1 | 4M |

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