

Reg. No.

Question Paper Code

11567

B.E. / B.Tech. - DEGREE EXAMINATIONS, NOV/DEC 2022

Sixth Semester

Electronics and Instrumentation Engineering

EI8077 - POWER ELECTRONICS AND DRIVES

(Regulations 2017)

Duration: 3 Hours

Max. Marks: 100

PART - A (10 × 2 = 20 Marks)

Answer ALL Questions

- | | <i>Marks,
K-Level, CO</i> |
|---|-------------------------------|
| 1. Define the term Pinch Off voltage of MOSFET. | 2,K2,CO1 |
| 2. List the advantages of GTO over SCR. | 2,K2,CO1 |
| 3. What is meant by phase controlled converters? | 2,K2,CO2 |
| 4. Mention the roles of freewheeling diode in a controlled rectifier. | 2,K2,CO2 |
| 5. Write the applications of DC Chopper? | 2,K1,CO3 |
| 6. List the disadvantages of frequency modulated chopper. | 2,K1,CO3 |
| 7. Sketch the diagram of Current source Inverter. | 2,K2,CO4 |
| 8. Recall the types of PWM techniques. | 2,K2,CO4 |
| 9. Name the types of electric braking. | 2,K1,CO5 |
| 10. Define v/f control of AC Drive. | 2,K1,CO5 |

PART - B (5 × 13 = 65 Marks)

Answer ALL Questions

11. a) Explain the input, output and switching characteristics of power BJT and identify the region of operation at different time periods. 13,K2,CO1
- OR**
- b) Explain why commutation is required in SCR? Explain class B commutation with neat sketch. 13,K2,CO1
12. a) Explain the functional modes of dual converter with necessary diagrams. 13,K2,CO2
- OR**
- b) Explain the operation of 3 phase fully controlled bridge rectifier with necessary diagrams. 13,K2,CO2
13. a) With a neat diagram, explain the construction and working of step-down and step-up chopper. Give its applications. 13,K2,CO3

K1 – Remember; K2 – Understand; K3 – Apply; K4 – Analyze; K5 – Evaluate; K6 – Create

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OR

b) Explain the working of Boost converter in detail with necessary waveforms and equations. 13,K2,CO3

14. a) Explain the operation of series Resonant Inverter. 13,K2,CO4

OR

b) Justify why PWM technique is required in inverters? Explain the various types PWM technique. 13,K2,CO4

15. a) Explain four quadrant operation of chopper fed DC Separately excited motor drive with necessary diagram. 13,K2,CO5

OR

b) Discuss in detail with suitable diagrams and waveforms of v/f control technique of Induction motor. 13,K2,CO5

PART - C (1 × 15 = 15 Marks)

16. a) Examine the operation of single phase step up cyclo converter with appropriate waveforms. 15,K3,CO2

OR

b) Explain matrix converters with necessary diagrams. 15,K3,CO2