



**B.E DEGREE EXAMINATIONS:DEC 2022**

(Regulation 2018)

Seventh Semester

**ELECTRONICS AND INSTRUMENTATION ENGINEERING**

U18EIE0017: Industrial Electronic Drives

**COURSE OUTCOMES**

**CO1:** Choose the power devices based on the application

**CO2:** Evaluate the performance parameters of AC-DC converters with R, RL and RLE Load

**CO3:** Describe the functioning of various DC-DC converters and inverters.

**CO4:** Identify the drives for various control applications

**Time: Three Hours**

**Maximum Marks: 100**

**Answer all the Questions:-**

**PART A (10 x 2 = 20 Marks)**

**(Answer not more than 40 words)**

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|--|-----|-------------------|
| 1. Compare power diode and signal diode?                       | CO1 | [K <sub>4</sub> ] |
| 2. List out the applications of power electronics.             | CO1 | [K <sub>2</sub> ] |
| 3. Name some of the application of controlled rectifier.       | CO2 | [K <sub>2</sub> ] |
| 4. Define total harmonics distortion.                          | CO2 | [K <sub>2</sub> ] |
| 5. What is meant by duty cycle?                                | CO2 | [K <sub>1</sub> ] |
| 6. List the types of control strategies.                       | CO2 | [K <sub>2</sub> ] |
| 7. What is natural commutation?                                | CO3 | [K <sub>1</sub> ] |
| 8. Outline the merits and demerits of Current Source Inverter. | CO3 | [K <sub>2</sub> ] |
| 9. What is meant by step up cyclo-converter?                   | CO4 | [K <sub>2</sub> ] |
| 10. Construct the AC Voltage controller mean?                  | CO4 | [K <sub>3</sub> ] |

**Answer any FIVE Questions:-**

**PART B (5 x 16 = 80 Marks)**

**(Answer not more than 400 words)**

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|---|----|-----|-------------------|
| 11. With neat sketch explain the turn on and turn off characteristics of BJT  | 16 | CO1 | [K <sub>2</sub> ] |
| 12. a) Summarize the PWM operation? List the various PWM techniques and explain any one of them                       | 8  | CO3 | [K <sub>2</sub> ] |
| b) With a neat circuit and relevant waveforms discuss the operation of an ideal single phase Current Source Inverter. | 8  | CO3 | [K <sub>2</sub> ] |

13.	Compare the operation of Class C and Class D types of two quadrant chopper	16	CO3	[K <sub>3</sub> ]
14.	Explain the operation of a single phase full bridge converter with RL load for continuous and discontinuous load currents.	16	CO2	[K <sub>2</sub> ]
15.	a) With a neat sketch and output voltage waveform, explain the working of full bridge SMPS	8	CO4	[K <sub>2</sub> ]
	b) Develop an Uninterrupted Power supply circuit and summarize its working	8	CO4	[K <sub>3</sub> ]
16.	Construct the three phase bridge inverter circuit with 180 degree mode of operation and show the output voltage waveforms.	16	CO2	[K <sub>3</sub> ]

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