

SECTION -B (ESSAY TYPE QUESTIONS)
(5x5=25 Marks)

1. Draw the characteristics for following
 - SCR
 - Triac
2. What are the various power diode? Explain the working of power MOSFET?
3. How source & load inductance effect the performance of AC convertor?
4. Differentiate Voltage source inverter and Current source inverter?
5. What are the basic elements of drives? What are the important parameters of selection of a drive?
6. What is DC motor? Also explain the various working modes?
7. What are the various types of inverter? Explain their operation?
8. Write short note on
 - Half controlled rectifier
 - Full controlled rectifier

==END OF PAPER==

BACHELOR OF VOCATION
Robotics and Automation
Subject: Power Electronics & Drives
Subject Code: DBEE-307
Semester: Fifth
July 2021
Theory (External): 35 Marks
Time: 03 Hours

Instructions to the Students

1. This Question paper consists of two Sections. All sections are compulsory.
2. Section A comprises 10 questions of objective type in nature. All questions are compulsory. Each question carries 1 mark.
3. Section B comprises 8 essay type questions out of which students need to do any 5. Each question carries 5 marks.
4. Read the questions carefully and write the answers in the answer sheets provided.
5. Do not write anything on the question paper.
6. Wherever necessary, the diagram drawn should be neat and properly labelled

Roll Number									

SECTION –A (SHORT/OBJECTIVE TYPE QUESTIONS)
(10x1=10 Marks)

- A. Silicon controlled rectifier (SCR) is a
a). Unijunction device
b). Device with three junction
c). Device with four junction
d). None of the above
- B. Thyristor is basically
a). PNP device
b). A combination of diac and triac
c). A set of SCRs
d). A set of SCR, diac and a triac
- C. Which semiconductor power device out of the following, is not a current triggering device?
a). Thyristor
b). Triac
c). G.T.O
d). MOSFET
- D. A thyristor equivalent of a thyatron tube is a
a). Diac
b). Triac
c). Silicon controlled rectifier
d). None of the above
- E. The inverter can be classified as
a). Voltage Source Inverter
b). Current Source Inverter
c). Both 1 and 2
d). Power Inverter
- F. Which of the following finds applications in speed control of a DC motor?
a). FET
b). NPN transistor
c). SCR
d). None of the above
- G. The Ward-Leonard system is used for controlling the speed of
a). DC motors
b). Single Phase AC motors
c). Three phase motors
d). Universal Motors
- H. A voltage source $200 \sin 314t$ is applied to a thyristor controlled halfwave rectifier with a resistive load of 50Ω . If the firing angle is 30° with respect to supply voltage waveform, the average power in the load is
a). 90.6 watts
b). 86.3 watts
c). 60.8 watts
d). 70.6 watts
- I. A fully controlled natural commutated 3-phase bridge rectifier is operating with a firing angle $\alpha = 30^\circ$. The peak to peak voltage ripple expressed as a ratio of the peak output dc voltage at the output of the converter bridge is
a). 0.5
b). $\sqrt{3}/2$
c). $2/\sqrt{3}$
d). 1
- J. In a three-phase halfwave rectifier, the ratio of average output voltage to per phase maximum AC voltage is
a). 0.955
b). 1.169
c). 0.827
d). 1.571