

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER-V (NEW) EXAMINATION – SUMMER 2019

Subject Code: 2152407
Date: 20/06/2019
Subject Name: Power Electronic Circuits-I
Time: 02:30 PM TO 05:00 PM
Total Marks: 70
Instructions:

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

	MARKS
Q.1 (a) Explain various operating modes of Power BJT.	03
(b) Define and explain latching current of SCR.	04
(c) Explain construction and working of IGBT with neat diagram.	07
Q.2 (a) Explain the concept of pulse width modulation.	03
(b) What is di/dt protection for SCR? Explain.	04
(c) Write a short note on dual converter.	07
OR	
(c) Write a short note on Multiphase Chopper circuit.	07
Q.3 (a) Draw and explain working of UJT relaxation oscillator circuit.	03
(b) Compare half wave uncontrolled rectifier with full wave uncontrolled rectifier in all respect.	04
(c) Write a short note on three phase half wave uncontrolled rectifier circuit.	07
OR	
Q.3 (a) What is phase angle control? Explain.	03
(b) What is function of type B chopper circuit? Explain.	04
(c) Explain working of single phase full bridge uncontrolled rectifier circuit with neat diagram.	07
Q.4 (a) What is Continuous conduction mode operation of DC-DC converter? Explain.	03
(b) What is difference between Flyback and Forward DC-DC converter?	04
(c) Explain working of full wave semi-controlled converter circuit with neat diagram.	07
OR	
Q.4 (a) What is Time ratio control?	03
(b) Explain difference in isolated and non-isolated type DC-DC converters.	04
(c) Discuss working principle of Buck type DC-DC converter circuit with diagram and waveforms.	07
Q.5 (a) Draw only circuit diagram & waveforms for Jones chopper.	03
(b) Explain Hard switching of the Power BJT device.	04
(c) Discuss operation of Push-Pull type isolated DC-DC converter with necessary diagrams.	07
OR	
Q.5 (a) Explain basic concept of ZVS.	03
(b) Draw and explain characteristics of four quadrant chopper.	04
(c) Write a brief note on L type Buck resonant converter with appropriate waveforms.	07
