

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-VI (NEW) EXAMINATION – SUMMER 2024****Subject Code:3162413****Date:15-05-2024****Subject Name:Power Electronics Circuits - II****Time:10:30 AM TO 01:00 PM****Total Marks:70****Instructions:**

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.
4. Simple and non-programmable scientific calculators are allowed.

		MARKS
Q.1	(a) Explain working of single phase full bridge inverter with gate pulses with R load.	03
	(b) Explain single-phase phase angle control method for AC voltage control.	04
	(c) Write technical note on: Integral cycle control.	07
Q.2	(a) Draw input & output voltage and current waveform for single phase full bridge inverter with R-L load.	03
	(b) Derive equation of r.m.s value of inverter output.	04
	(c) Define THD and find out its value for square wave output voltage of single phase inverter.	07
	OR	
	(c) Explain single-phase AC voltage controller with R-L load. Draw necessary diagram and waveforms.	07
Q.3	(a) Define modulation index for SPWM.	03
	(b) Draw circuit diagram of 5-level diode clamp multilevel inverter.	04
	(c) Give comparison of VSI & CSI.	07
	OR	
Q.3	(a) Discuss importance of dead band for inverter.	03
	(b) State four advantages of multilevel inverter.	04
	(c) Discuss 150° conduction for 3-phase inverter with necessary diagrams & waveforms.	07
Q.4	(a) What is 3rd harmonic injection SPWM ?	03
	(b) Describe unipolar PWM waveforms with diagrams.	04
	(c) Explain single-phase to single-phase step down cycloconverter for discontinuous load current. Draw necessary diagram and waveforms.	07
	OR	
Q.4	(a) Define odd and even symmetry of waveform.	03
	(b) Describe bipolar PWM waveforms with diagrams.	04
	(c) Define half wave & quarter wave symmetry and also discuss its significance for Fourier analysis.	07
Q.5	(a) Write short note on selective harmonic elimination method.	03
	(b) Find out average value of the waveform given in fig.1.	04
	(c) Give block diagram description for internal & external control method of inverter.	07

OR

- Q.5** (a) Draw diagram of 5-level cascaded H-bridge multilevel inverter. **03**
(b) Find out r.m.s value of the waveform given in fig.1. **04**
(c) Write detailed note on space vector PWM. **07**

