

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-III(NEW) EXAMINATION – SUMMER 2023****Subject Code:2130902****Date:28-07-2023****Subject Name:Analog Electronics****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.
4. Simple and non-programmable scientific calculators are allowed.

		MARKS
Q.1	(a) Draw the block-diagram of typical op-amp.	03
	(b) Write note on Class AB push pull amplifier.	04
	(c) Draw the IC-555 based astable multivibrator circuit and derive equation for frequency of output waveform.	07
Q.2	(a) Briefly explain the concept of feedback and enlist advantages of negative feedback.	03
	(b) State the characteristics of the ideal Op-amp.	04
	(c) Write a short-note on	07
	(i) PSRR (ii) CMRR	
	OR	
	(c) Classify the types of negative feedback and explain each in brief.	07
Q.3	(a) Define:	03
	(i) Input offset voltage	
	(ii) Input offset current	
	(iii) Input bias current	
	(b) Explain the procedure of offset voltage compensation in an op-amp.	04
	(c) Explain in detail op-amp based Voltage-to-Current converter with grounded load.	07
	OR	
Q.3	(a) Write a short-note on op-amp based Zero-crossing Detector.	03
	(b) Briefly explain op-amp based Peaking amplifier circuit.	04
	(c) Explain in detail working of Inverting and Non-inverting amplifier in open loop op-amp configuration.	07
Q.4	(a) Define slew rate. List and explain various causes of slew rate in an op-amp.	03
	(b) Draw two op-amp based differential amplifier and derive expressions for its gain.	04
	(c) Write a short-note on triangular wave generator circuit using op-amp.	07

OR

- Q.4** (a) Briefly explain advantages of active filters over passive Filters. **03**
(b) List and explain the important characteristics of the comparator. **04**
(c) Draw and explain Wien Bridge Oscillator circuit **07**
- Q.5** (a) Draw and explain schematic symbol for the op-amp. **03**
(b) Explain the working of averaging amplifier when connected in inverting mode. **04**
(c) Write a short note on first order low-pass butterworth filter. **07**

OR

- Q.5** (a) List advantages and disadvantages of adjustable voltage regulators **03**
(b) Discuss the working of IC555 with function of each pin. **04**
(c) Draw and explain Phase shift oscillator circuit **07**
