GUJARAT TECHNOLOGICAL UNIVERSITY
BE - SEMESTER– III (NEW) EXAMINATION – SUMMER 2022

Subject Code:3130305   **Date:15-07-2022**
Subject Name:Advanced 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)	What do you understand by unity follower? Explain its gain term	**03**
(b)	How is an ideal an Operational Amplifier different from a Practical Operational Amplifier? Explain.	**04**
(c)	Give the internal block diagram of op-amp and mention the role of each stage.	**07**
Q.2 (a)	Draw a non-inverting amplifier using op-amp and derive expression for its output voltage.	**03**
(b)	Explain V to I converter using op-amp floating load.	**04**
(c)	What is instrumentation amplifier? Draw a circuit of instrumentation amplifier using 3 op-amps and derive the gain equation.	**07**
	OR	
(c)	Draw and explain the circuit diagram of summing, scaling and averaging amplifier and write its output equation.	**07**
Q.3 (a)	Write the advantages of active filters over the passive filters.	**03**
(b)	Draw the pin diagram of AD620. Explain the features of AD620 and provide the gain equation for the same.	**04**
(c)	Draw the circuit diagram of basic integrator and practical integrator. Derive the mathematical equation.	**07**
	OR	
Q.3 (a)	Define line and load regulation.	**03**
(b)	What is comparator? How op-amp can be used as comparator	**04**
(c)	Design a wein bridge oscillator using op-amp for f0 = 1005HZ.	**07**
Q.4 (a)	Draw and explain the ideal and realistic response of LP and HP filters	**03**
(b)	Explain the operation of Class A amplifier.	**04**
(c)	Draw and explain the 1st order and 2nd order active High pass filter for the cut off frequency 1.5KHz, C= 0.01 uf. Also derive the output equation for the 1st order L.P.F.	**07**
	OR	
Q.4 (a)	Explain basic operation of DIAC and TRIAC.	**03**
(b)	Design a 50Hz active notch filter.	**04**
(c)	Draw and explain the circuit diagram of astable multivibrator as square wave generator.	**07**
Q.5 (a)	What do you mean by oscillator? What is the need of an oscillator?	**03**
(b)	Explain the basic structure, operation and breakover characteristics of Schockley diode.	**04**
(c)	With a neat diagram explain the comparator using an op-amp.	**07**

OR

Q.5 (a) Explain the working principle of relay. List out the types of relays. **03**

(b) Draw and explain the circuit diagram of Phase locked loops. **04**

(c) Design the phase shift oscillator for fo = 200Hz **07**

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