Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–III(New) EXAMINATION – SUMMER 2016

Subject Code:2130305 **Date:09/06/2016**

Subject Name:Analog Circuits-I

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.**

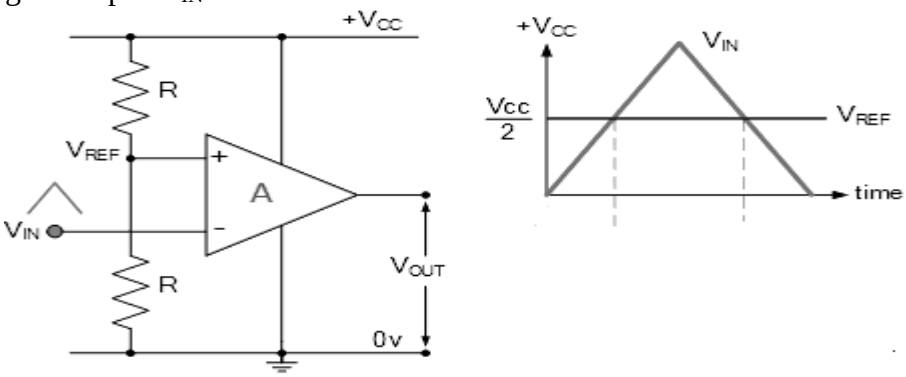
1.

MARKS

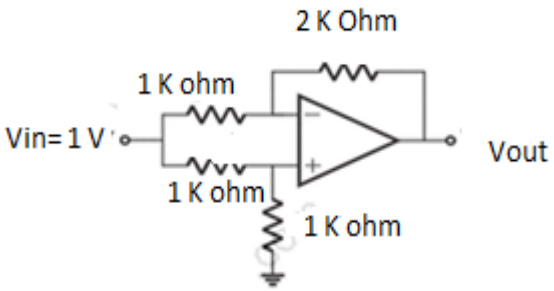
Q.1 **Short Questions** **14**

1 Draw the pin diagram of OPAMP IC.
2 Define Input offset voltage.
3 Explain anyone method to remove offset voltage.
4 What is the input impedance of inverting configuration of Op-amp?
5 Draw the circuit of Unit gain amplifier.
6 What is the phase difference between Input and Output of Phase shift oscillator?
7 Define CMRR.
8 Define Pinch off voltage of FET.
9 Why Common Emitter configuration is preferred for amplification?
10 A BJT has a Base Current of 250 µA and Emitter Current of 16mA. Determine the Collector Current gain.
11 Draw the circuit of differential amplifier.
12 What is thermal drift?
13 Draw Common collector configuration of transistor.
14 What is loading effect?

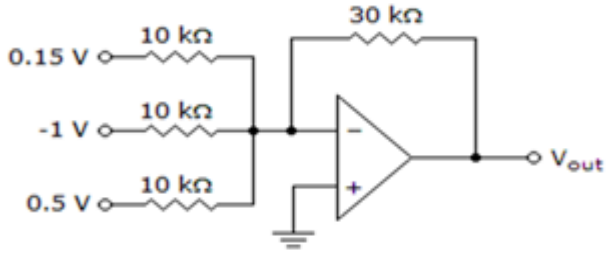
Q.2 **(a)** Draw the output waveform of below given op-amp based circuit for given input V_{IN}. **03**



(b) For the below given Op-Amp circuit, find out Vout. **04**



	(c)	Derive the equation of gain for the instrumentation amplifier.	**07**
		OR	
	(c)	Compare Half wave, full wave and bridge rectifiers. Draw the circuit, input waveform and output waveforms.	**07**
Q.3	**(a)**	Explain circuit of I to V converter with necessary equations.	**03**
	(b)	Find out Vout of Given circuit	**04**



	(c)	Draw circuit of OPAMP based differentiator and derive equation of output.	**07**
		OR	
Q.3	**(a)**	Explain circuit of V to I converter with necessary equations.	**03**
	(b)	Draw the circuit of summing amplifier and derive the equation of gain.	**04**
	(c)	Draw circuit of OPAMP based Integrator and derive equation of output.	**07**
Q.4	**(a)**	Draw various configurations of clampers with input-output waveforms.	**03**
	(b)	Draw and explain VI characteristics of PN junction diode.	**04**
	(c)	Explain working of Schmitt trigger circuit.	**07**
		OR	
Q.4	**(a)**	Discuss application of Zener diode as voltage regulator.	**03**
	(b)	Draw series and parallel diode configurations of clipper with input and output waveforms.	**04**
	(c)	Draw and explain voltage multiplier circuits.	**07**
Q.5	**(a)**	Draw internal construction of D MOSFET and Explain its working.	**03**
	(b)	Explain working of transistor as switch.	**04**
	(c)	Explain JFET based amplifier.	**07**
		OR	
Q.5	**(a)**	Draw internal construction of E MOSFET and Explain its working.	**03**
	(b)	Discuss various regions of operation for a JFET.	**04**
	(c)	Draw and derive necessary equations for BJT-voltage divider biased circuit.	**07**

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