Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–III(New) • EXAMINATION – WINTER 2016

Subject Code:2130902 Date:04/01/2017

Subject Name:Analog Electronics

Time: 10:30 AM to 01:00 PM Total Marks: 70

Instructions:

- **Attempt all questions.**
- **Make suitable assumptions wherever necessary.**
- **Figures to the right indicate full marks.**

			MARKS
Q.1		Short Questions	**14**
	1	What is the position of Q-point on the load line for Class AB amplifier?	
	2	In which negative amplifiers the in-put resistance is increases?	
	3	Define: CMRR	
	4	Define: Slew Rate.	
	5	Draw the OP-AMP based subtractor circuit.	
	6	Which component is used as feed back element for differentiator?	
	7	Write the condition for sustained oscillator?(Barkhausen criteria)	
	8	What is the value of Hysteresis voltage for Schmitt trigger circuit?	
	9	Define Q of a filter.	
	10	Draw the pin diagram of IC 555.	
	11	Which multivibrator is used as a flip flop?	
	12	How much voltage is generated by the IC 7812?	
	13	Define VCO.	
	14	Define setting time.	
Q.2	**(a)**	Explain the basic principal of feed back.	**03**
	(b)	Compare: Class B Push pull and Complementary symmetry type of power amplifier.	**04**
	(c)	Explain in detail: Class B push pull amplifier.	**07**
		OR	
	(c)	Draw the C.E. amplifier circuit with and without bypassed R_E, also draw the hybrid equivalent circuit for the same.	**07**
Q.3	**(a)**	Find the maximum frequency for a sine wave, output voltage of 10V peak with an op-amp whose slew rate is 1V/μS.	**03**
	(b)	Derive the equation for non inverting amplifier using OP-AMP	**04**
	(c)	Explain the working of a summing and averaging amplifier when connected in inverting mode.	**07**
		OR	
Q.3	**(a)**	For inverting amplifier V_1= 1V, V_2= 3V, V_3= 2V with R_1=R_2=R_3= 2KΩ and R_F= 3KΩ, determine the output voltage.	**03**
	(b)	Compare: inverting and non inverting amplifier.	**04**
	(c)	Explain in detail voltage follower with its applications.	**07**
Q.4	**(a)**	Compare: R-C phase shift and wein bridge oscillator.	**03**
	(b)	Design a R-C phase shift oscillator to produce a sinusoidal output at $1K_{HZ}$, using capacitor value 0.01 μF.	**04**
	(c)	Write short note on : Integrator.	**07**

OR

Q.4	**(a)**	Explain inverting comparator.	**03**
	(b)	Compare: Comparator and Schmitt trigger.	**04**
	(c)	Explain symmetric Square wave generator using op-amp.	**07**
Q.5	**(a)**	Design a monostable multivibrator using IC 555 for V_{CC}= 12V and pulse width of 1ms, and capacitor = 0.1μF.	**03**
	(b)	Compare: Astable, monostable and bistable Multivibrator.	**04**
	(c)	Explain in detail: first order butter worth low-pass filter.	**07**

OR

Q.5	**(a)**	List out the different performance parameter of a power supply.	**03**
	(b)	Describe the operation of a LM 317 voltage regulator.	**04**
	(c)	Describe the basic building blocks of PLL.	**07**

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