

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 $1V/\mu S$.	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 $R_1=R_2=R_3= 2K\Omega$ and $R_F= 3K\Omega$, 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 $1KHz$, using capacitor value $0.01 \mu F$.	04
	(c) Write short note on : Integrator.	07

OR

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