

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER- IV EXAMINATION – SUMMER 2020****Subject Code: 3141002****Date: 26/10/2020****Subject Name: Analog Circuit Design****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.

	MARKS
Q.1 (a) List ideal characteristics of OP-AMP.	03
(b) Define following terms. Slew Rate, CMRR, SVRR, I/P offset voltage.	04
(c) Explain inverting differentiator circuit using OP-AMP.	07
Q.2 (a) Derive gain expression for voltage series F/B amplifier using OP-AMP.	03
(b) Explain window detector using OP-AMP.	04
(c) Write and explain differential amplifier using two OP-AMP.	07
OR	
(c) Explain Schmitt trigger circuit operation using OP-AMP.	07
Q.3 (a) Explain circuit made up of OP-AMP that does subtraction.	03
(b) Explain All pass filter using OP-AMP.	04
(c) Explain chebyshev filter using OP-AMP with derivations.	07
OR	
Q.3 (a) Define following terms. Lock Range for PLL, Capture Range for PLL, Frequency Stability for Oscillators.	03
(b) Explain class B push pull power amplifier.	04
(c) Draw and explain triangular wave generator using OP-AMP.	07
Q.4 (a) Explain I to V converter using OP-AMP.	03
(b) Explain phase shift oscillator using OP-AMP in detail.	04
(c) Explain CE short-circuit current gain including resistive load R_L .	07
OR	
Q.4 (a) Explain voltage limiter circuit using OP-AMP with suitable example.	03
(b) Draw and explain class A power amplifier.	04
(c) Derive expression for trans-conductance g_m in Hybrid – Π model.	07
Q.5 (a) Design Monostable multivibrator for $T_P = 11$ millisecond, take $C = 0.01$ milliferad.	03
(b) Explain PLL using functional block diagram.	04
(c) Explain 555 A-stable multivibrator.	07
OR	
Q.5 (a) Write short note on adjustable voltage regulator.	03
(b) Design A-stable multivibrator using IC 555 for $T_{on} = 50\%$ of T, take $F = 1$ KHz, $C = 0.1$ milliferad.	04
(c) Explain Monostable multivibrator using IC 555.	07
