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GUJARAT TECHNOLOGICAL UNIVERSITY
BE - SEMESTER- IV EXAMINATION - SUMMER 2020
Subject Code: 3141002Date: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. ..... 04
Slew Rate, CMRR, SVRR, I/P offset voltage.
(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. ..... 03
Lock Range for PLL, Capture Range for PLL, Frequency Stability for Oscillators.
(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 $\mathrm{R}_{\mathrm{L}}$. ..... 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 gm in Hybrid - $\Pi$ model. ..... 07
Q. 5 (a) Design Monstable multivibrator for $\mathrm{T}_{\mathrm{P}}=11$ millisecond, take $\mathrm{C}=0.01$ ..... 03milliferad.
(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 $\mathrm{Ton}=50 \%$ of T , take $\mathrm{F}=1$ ..... 04 $\mathrm{KHz}, \mathrm{C}=0.1$ milliferad.(c) Explain Monostable multivibrator using IC 555.07
