

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-VI-. EXAMINATION – WINTER 2013****Subject code: 160801****Date: 27/11/2013****Subject Name: Integrated Circuit & Application****Time: 2:30pm To 5:00pm****Total Marks: 70****Instructions:**

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

Q.1 (a) Define Op-Amp. Draw and explain block diagram representation of a typical Op-Amp. **07**

(b) Explain following performance parameters of Op-Amp. **07**
(i) Input Offset Voltage (ii) Input Offset Current (iii) Input Bias Current (iv) CMRR (v) Slew Rate.

Q.2 (a) Explain Schmitt Trigger in detail. **07**

(b) For a non-inverting amplifier, the values of R_1 and R_f are $1k\Omega$ and $10k\Omega$ respectively. The various op-amp parameters are, Open loop gain = 2×10^5 , Input Resistance = $2 M\Omega$, Supply voltages = $\pm 12 V$, Output Resistance = 75Ω , Single break frequency = $5 Hz$. Calculate closed loop gain, input resistance, output resistance and bandwidth with feedback. **07**

OR

(b) For the practical inverting amplifier, the values of R_1 and R_f are 470Ω and $4.7k\Omega$. The various op-amp parameters are, Open loop gain = 2×10^5 , input resistance = $2M\Omega$, Supply voltages = $\pm 15 V$, Output resistance = 75Ω , single break frequency = $5 Hz$. Calculate the closed loop voltage gain, input resistance, output resistance and bandwidth with feedback. **07**

Q.3 (a) Write short note on practical and ideal Integrator Circuit. **07**

(b) Explain Summing, Scaling and Averaging Amplifier circuit. **07**

OR

Q.3 (a) Explain V-I converter with (i) Floating Load, (ii) Grounded Load. **07**

(b) Explain Instrumentation Amplifier using transducer bridge with its Applications. **07**

Q.4 (a) Write short note on Negative Clipper circuit. **07**

(b) Explain the operation of Sample & Hold circuit with its applications. **07**

OR

Q.4 (a) Explain precision Full Wave Rectifier in detail. **07**

(b) Write short note on Basic Log Amplifier using diode. **07**

Q.5 (a) Explain IC 555 as an Astable Multivibrator. **07**

(b) Explain Monostable Multivibrator as a frequency divider and pulse width Modulator in detail. **07**

OR

Q.5 (a) Explain Phase locked loop as a frequency multiplier and FSK demodulator. **07**

(b) Explain block diagram and operation of Phase Locked Loop. **07**
