

GUJARAT TECHNOLOGICAL UNIVERSITY**B E Sem-VI Examination May 2011****Subject code:160801****Subject Name: Integrated Circuits & Application****Date:16/05/2011****Time: 10.30 am – 01.00 pm****Total Marks: 70****Instructions:**

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

- Q.1** (a) What is Op-Amp? Draw and Explain the block diagram representation of a typical Op-Amp. **07**
- (b) Draw and explain the block diagram of IC 555 Timer **07**

- Q.2** (a) 1).Explain the ideal voltage transfer curve. **04**
 2).Explain the equivalent circuit of practical op-amp. **03**
- (b) Why Op-Amp is generally not used in open loop mode? Explain close loop configuration of Op-Amp. And give the advantages of negative feedback. **07**

OR

- (b) 1.An Op-Amp having the following parameters is connected as a non inverting amplifier with $R_1=1\text{ k}\Omega$ and $R_F=10\text{ k}\Omega$:
 And $A=200,000$, $R_i=2\text{ M}\Omega$, $R_o=75\Omega$, $f_o=5\text{ Hz}$, supply voltage $=\pm 15\text{ V}$, output voltage swing $=\pm 13\text{ V}$
 Compute the values of A_F , R_{IF} , R_{OF} , F_F , and V_{OOT} .
 2.Define following terms a. CMRR b. PSRR **02**

- Q.3** (a) Define Error voltage and Derive its equation for Op-Amp. **07**
- (b) Explain the Effect of input offset voltage and input bias current on output offset voltage of Op-Amp. **07**

OR

- Q.3** (a) Explain the difference between Bandwidth, Transient Response and Slew Rate. **07**
- (b) Design a differentiator to differentiate an input signal that varies in frequency from 10 Hz to about 1 kHz. Draw output waveform if a sine wave of 1V peak at 1000Hz is applied to this differentiator **07**

- Q.4** (a) Explain the practical integrator circuit and obtain its output voltage. **07**
- (b) Explain the Peaking Amplifier. **07**

OR

- Q.4** (a) Write a Short note on very high input impedance circuit. **07**
- (b) What are precision rectifiers? Explain the operation of half wave positive & negative precision rectifier. **07**

- Q.5** (a) Explain the monostable multivibrator operation of IC 555 Timer and Derive expression for output pulse width. **07**
- (b) Explain the operation of Phase Locked Loop with its block diagram. **07**

OR

- Q.5** (a) Write a short note on Schmitt trigger. **07**
- (b) Explain basic Log-amplifier using diode. **07**
