

Seat No.: _____

Enrolment No. _____

GUJARAT TECHNOLOGICAL UNIVERSITY
BE SEM-VI Examination-Nov/Dec-2011

Subject code: 160801

Date: 21/11/2011

Subject Name: Integrated Circuits & Application

Time: 10.30 am -1.00 pm

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) Which power supply is used for the op-Amp? How we can obtain dual supply from single supply? **07**
(b) Explain the significance of virtual ground and virtual short. **07**

- Q.2** (a) Explain the various offset nulling techniques used in op-amp. **07**
(b) Define Rise time. Derive the relation between the Rise time and cut-off frequency of the op-amp. **07**

OR

- (b) How the input offset voltage effects the output of the op-amp? **07**

- Q.3** (a) Show that the output of the subtractor is proportional to the difference between the two input voltages. **07**
(b) In an inverting adder circuit the input voltages are 0.3V, 0.5V, 0.1V while $R_1=R_2=R_3=1\text{K}\Omega$. If $R_f=10\text{K}\Omega$, Calculate the output voltage. **07**

OR

- Q.3** (a) What is an Instrumentation Amplifier? Explain it with suitable example. **07**
(b) Draw & explain differential input differential output amplifier. **07**

- Q.4** (a) Explain Op-amp as a Schmitt trigger. **07**
(b) Explain the operation of monostable multivibrator using op-amp. **07**

OR

- Q.4** (a) Explain the operation of V-I converter with grounded load. **07**
(b) Draw and explain the operation of peak detector. **07**

- Q.5** (a) Discuss the zero crossing detector with its circuit diagram. **07**
(b) Explain the practical integrator circuit. Explain its advantages. Also draw its frequency response. **07**

OR

- Q.5** (a) Draw and explain the functional block diagram of IC 555. **07**
(b) What is Op-Amp? Draw and explain typical block diagram of the op-amp. **07**
