

**GUJARAT TECHNOLOGICAL UNIVERSITY**  
**BE - SEMESTER-VI • EXAMINATION – SUMMER • 2014**

**Subject Code: 160801****Date: 19-05-2014****Subject Name: Integrated Circuits and Application****Time: 10.30 am - 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.

- Q.1** (a) Draw and explain the block diagram of IC 555 Timer. **07**  
(b) Define Rise time. Derive the relation between the Rise time and Cut-off frequency of the Op-Amp. **07**
- Q.2** (a) Explain the effect of input offset voltage on the output of Op-Amp. **07**  
(b) Explain the Monostable Multivibrator using IC 555 Timer. **07**
- OR**
- (b) Write a short note on Free-Running Ramp Generator. **07**
- Q.3** (a) Write a short note on Sample and Hold circuit. **07**  
(b) What is Op-Amp? Draw and Explain the block diagram representation of a typical Op-Amp. **07**
- OR**
- Q.3** (a) Write a short note on Absolute value output circuit. **07**  
(b) Explain basic antilog-amplifier using diode. **07**
- Q.4** (a) Explain the difference between Bandwidth, Transient Response and Slew Rate. **07**  
(b) Define Error voltage and Derive its equation for Op-Amp. **07**
- OR**
- Q.4** (a) Show that the output of the subtractor is proportional to the difference between the two input voltages. **07**  
(b) Draw and explain Ideal Voltage Transfer Curve for Op-Amp. **07**
- Q.5** (a) Draw and explain the block diagram of Instrumentation Amplifier. **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**
- OR**
- Q.5** (a) Write a short note on Peaking Amplifier. **07**  
(b) Write a short note on very high input impedance circuit. **07**

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