**Karunya University**

**(Karunya Institute of Technology and Sciences)**

(Declared as Deemed to be University under Sec.3 of the UGC Act, 1956)

**Supplementary Examinations – June 2016**

**Subject Title: LINEAR INTEGRATED CIRCUITS Time : 3 hours**

**Subject Code: 14EC2008 Maximum Marks: 100**

**Answer ALL questions (5 x 20 = 100 Marks)**

1. **Compulsory:**

Describe the basic processes used to fabricate ICs using silicon planar technology with necessary diagrams.

2. a. Explain the AC characteristics of an op-amp in detail. (10)

b. Draw the circuit diagrams, input-output waveforms of basic and lossy integrator and explain their working and list the applications. (10)

**(OR)**

3. a. Design an op-amp differentiator that will differentiate an input signal with fmax = 100 Hz. (10)

b. Explain in detail about the inverting and non- inverting mode of an op-amp. (10)

4. a. Derive the expression for time constant for a monostable multivibrator with necessary

diagrams. (10)

b. Explain triangular wave generator in detail with neat circuit diagram. Derive the frequency of oscillation. (10)

**(OR)**

5. a. With the help of a block diagram and waveforms, explain how op-amp is used as an

square wave generator. Find the frequency of oscillation.

6. a. Design a wide band reject filter having fl = 200Hz, fh = 4 kHz and pass band gain of 2. (10)

b. Derive an expression for the transfer function of a first order high pass filter. Also derive the expression for frequency response. (10)

**(OR)**

7. a. Explain how 555 timer works as an astable multivibrator and derive the value of T. (10)

b. With a neat circuit, explain the operation of second order active LPF. Derive the transfer

function. (10)

8. Draw the schematic of a DAC and explain any two resistive techniques used to implement the same.

**(OR)**

9. Explain the basic principle and working of the phase locked loop with its applications in detail.