Reg.No. \_\_\_\_\_\_\_\_\_\_\_\_



**UNIVERSITY**

(Karunya Institute of Technology & Sciences)

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

**End Semester Examination – April / May – 2017**

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| **Code :** | **14EC2008** | **Duration :** | **3hrs** |
| **Sub. Name :** | **LINEAR INTEGRATED CIRCUITS** | **Max. marks : 100** | |

**ANSWER ALL QUESTIONS (5 x 20 = 100 Marks)**

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| **Q. No.** | **Sub Div.** | **Questions** | **Course**  **Outcome** | **Marks** |
| 1. | a. | Discuss about Inverting and Non-inverting amplifier using op-amp circuit and derive the expression for gain with a diagram. | CO1 | 10 |
| b. | Design and derive an adder circuit using opamp to getthe output expression as  V0=-(0.1V1+V2+10V3) | CO1 | 10 |
| (OR) | | | | |
| 2. | a. | Derive the expression for output voltage in log amplifier using opamp  with a neat diagram. | CO1 | 10 |
| b. | Explain the frequency response of the basic and practical differentiator. | CO1 | 10 |
| 3. | a. | Explain the working of precision diode as half wave rectifier and full wave rectifier with necessary circuits and input/output waveforms. | CO1 | 12 |
|  | b. | With a neat diagram explain the working of Regenerative Comparator. | CO1 | 8 |
| (OR) | | | | |
| 4. | a. | Derive the expression for time constant for a monostablemultivibrator using IC741 opamp with necessary explanation and timing diagrams. | CO1 | 12 |
|  | b. | Multiplier IC configured as Divider. Justify with proper circuit. | CO1 | 8 |
| 5. | a. | Explain the operation of RC phase shift oscillator and derive the expression of frequency and gain. | CO1 | 12 |
|  | b. | Design a second order Butterworth low pass filter having upper cut off frequency 1kHz. | CO1 | 8 |
| (OR) | | | | |
| 6. | a. | Explain the operation of Wien Bridge oscillator and derive the expression of frequency and gain. | CO1 | 10 |
|  | b. | Design a wide band pass filter having pass band gain = 4, fl=200 Hz, fh=1kHz. | CO1 | 10 |
| 7. | a. | Explain the operation of PLL and list out some applications using PLL | CO1 | 8 |
|  | b. | Explain the working of free running multivibrator using 555 timer and derive the expression for frequency. | CO2 | 12 |
| (OR) | | | | |
| 8. | a. | Design a analog to digital converter circuit with R-2R type for the binary input 100. | CO1 | 10 |
|  | b. | What are the types of Analog to digital converters and Explain the working of Flash type converter. | CO1 | 10 |
|  | | **Compulsory:** |  |  |
| 9. |  | Describe in detail about the planar process used in the fabrication of IC. | CO3 | 20 |