**Reg. No. _____**

# Karunya University

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

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

## End Semester Examination – November/December 2010

**Subject Title: LINEAR INTEGRATED CIRCUITS AND ITS APPLICATIONS**

**Time: 3 hours**

**Subject Code: EC211** **Maximum Marks: 100**

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## Answer ALL questions

## PART – A (10 x 1 = 10 MARKS)

1. List any two advantages of Integrated circuits.
2. What is meant by photolithography?
3. Give the circuit symbol of op-amps.
4. Mention two applications of op-amps.
5. What are bistable multivibrators?
6. What is current fold back?
7. Give some applications of multipliers.
8. What are band reject filters?
9. Give the applications of PLL.
10. What is the drawback of flash type ADC's

## PART – B (5 x 3 = 15 MARKS)

11. What are CMOS IC's? List few unique advantages of them.
12. Derive the expression for output voltage of an inverting Op-Amp.
13. Draw the basic regulator circuit. What does it comprise of?
14. What are switched capacitor filters?
15. Explain why a loop filter is needed in PLL.

## PART – C (5 x 15 = 75 MARKS)

16. a. With neat sketch, explain the fabrication of monolithic bipolar junction transistors in detail. (10)
    b. What are the types of Integrated circuits? (5)

(OR)

17. a. Give a short note on dielectric isolation. (5)
    b. Explain how an integrated JFET is fabricated on a silicon wafer. (10)

18. Explain the following op-amp applications in detail (8+7)
    a. Integrator b. Multiplier

(OR)

19. a. Discuss the frequency compensation techniques of op-amp. (10)
    b. Explain the significance of terms CMRR and PSRR. (5)

20. Explain in detail about the series OP AMP regulator.

(OR)

21. What are comparators? Explain in detail, the comparator characteristics. Discuss one example.

22. Explain with relevant figures the functioning module of IC 555 and its working.

(OR)

23. a. Derive an expression for the transfer function of a first order low pass filter. Also derive the expression for frequency response. (10)
    b. Determine the order of a low pass butterworth filter that is to provide 40 dB attenuation at $w/w_h = 2$. (5)

24. Explain any two applications of PLL with necessary sketch.

(OR)

25. Give a detailed note on the following: (8+7)
    a. R – 2R DAC b. Dual slope ADC