



# LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034

## B.Sc. DEGREE EXAMINATION – PHYSICS

FIFTH SEMESTER – APRIL 2014

### PH 5404 - ELECTRONICS - II

Date : 15/04/2014  
Time : 09:00-12:00

Dept. No.

Max. : 100 Marks

#### PART - A

Answer **ALL** questions

(10 x 2 = 20)

1. Determine the cutoff frequency of a low pass filter given  $R_f=15.8 \text{ k}\Omega$ ,  $R_1=27 \text{ k}\Omega$ ,  $C_2= 0.0047\mu\text{F}$ ,  $C_3 = 0.0047 \mu\text{F}$ ,  $R_2 = 33\text{k}\Omega$ ,  $R_3 = 33\text{k}\Omega$ .
2. What will be the output when  $V_i=V_m \sin \omega t$  is given to a differentiator?
3. Give the expression for output voltage for a 5 bit binary weighted D/A converter?
4. Explain the terms sampling and holding in A/D converters.
5. Write a short note on linear IC's.
6. What is VLSI?
7. What are two byte instructions? Give an example.
8. Explain the use of HOLD and HLDA pins in microprocessor 8085
9. Give any three instructions that clears the accumulator.
10. Differentiate between INR L, INR H and INX H.

#### PART - B

Answer any **FOUR** questions

(4 x 7.5 = 30)

11. Solve the following differential equation using operational amplifier  $d^2y/dt^2 - 2y + 2 = 0$ .
12. With a neat diagram, explain the process of A/D conversion using voltage to frequency converter.
13. Discuss in detail the classification of IC's based on their structure.
14. Explain the different rotate instructions in microprocessor 8085.
15. Write an assembly language program to determine the square root of a given number by direct mode of addressing.

#### PART - C

Answer any **FOUR** questions

(4 x 12.5 = 50)

16. Explain with a neat diagram the working of an OP-AMP based astable multivibrator.
17. (a) Explain the working of 4 bit R-2R ladder D/A converter. Give the necessary theory. (6.5)  
(b) For a 4 bit R-2R ladder D/A converter determine the following (i) output voltage when LSB is set.  
(ii) Output voltage for 1110 (iii) Full scale voltage. Assume 0 = 0V and 1 = 5V. Given  $R_f=R=10\text{k}\Omega$   
(6)
18. Name and explain the different processes in preparing the surface of a semiconductor wafer for fabricating an IC.
19. Explain the architecture of Intel 8085 with a neat diagram.
20. Write assembly language programs

(a) To evaluate the expression  $X = (A \times B) + (C \times D)$ . (5)

(b) To find the smallest number in an array of 10 numbers by indirect mode of addressing. (7.5)