LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034

 **B.Sc.** DEGREE EXAMINATION – **COMPUTER SCIENCE**

 THIRD SEMESTER – NOVEMBER 2010

# PH 3106 / CS 3101 - APPLIED ELECTRONICS

 Date : 10-11-10 Dept. No. Max. : 100 Marks

 Time : 9:00 - 12:00

**PART A**

**ANSWER ALL QUESTIONS 10 x 2 = 20**

1. What is doping in extrinsic semiconductor?
2. What is a depletion layer?
3. What is the output voltage of a summing amplifier when V1 = 2V, V2 = 1V, R1 = 10 kΩ ,
R2 = 10 kΩ , Rf = 10 kΩ.
4. Differentiate analog and digital signals.
5. Write a short note on program counter.
6. What is a Flip flop?
7. Find the complement of $A \overbar{B}+ \overbar{C} \overbar{D}$.
8. Draw the block diagram of a T-Flip flop using JK Flip flop and give its truth table
9. Simplify using K – map Y = F(A,B) = Σ (1,2,3 )
10. Define Hit ratio.

**PART B**

**ANSWER ANY FOUR QUESTIONS 4 x 7.5 = 30**

1. Write short notes on (i) intrinsic semiconductor (ii) extrinsic semiconductors (iii) PN junction diode
2. Explain the working of an OP-AMP inverting amplifier with a circuit diagram.
3. With a neat diagram and truth table discuss the working of a Johnson’s counter
4. Explain the working of a full adder with circuit diagram and truth table
5. (a) Differentiate between ROM and RAM (2)

(b) Explain various types of ROM (5.5)

**PART C**

**ANSWER ANY FOUR QUESTIONS 4 x 12.5 = 50**

1. Describe the operation of a NPN transistor in common emitter mode. Obtain the input and output characteristics for the same.
2. Explain with circuit diagram, the working of an op-amp based 4 bit R-2R ladder D/A converter.
3. (a) Simplify using K – map Σ (0,2,5,7,8,9,10,11,12,13,14,15) (8.5)

(b) Show that $\left(\overbar{A}+ B\right)\left(\overbar{B}+ C\right)\left(\overbar{C}+ A\right)=(A+\overbar{B})(B+\overbar{C})(C+\overbar{A})$ (4)

1. (a) Explain the shift left shift register with a neat diagram (6.5)

 (b) Explain the working of a D-Flip flop with its truth table (6)

1. (a) Explain in detail the timing and control in a basic computer. (6)

 (b) Explain the various components in memory hierarchy (6.5)

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