LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034

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

THIRD SEMESTER – APRIL 2010

PH 3106 / CS 3101 - APPLIED ELECTRONICS

Date & Time: 28/04/2010 / 1:00 - 4:00 Dept. No. | | Max. : 100 Marks

PART - A

ANSWER ALL QUESTIONS: **(10 x 2 = 20)**

1. What is a Zener diode?
2. Define Fermi level.
3. What is CMRR?
4. Write four important characteristics of an ideal operational amplifier.
5. Simplify $Y = [\overline{A}B\,(C + B\overline{D})\overline{\ } + A\,B\,]\,C$
6. Draw the block diagram of a ` D ' Flip Flop using JK Flip Flop and give its truth table.
7. Simplify using K-map $F(A,B,C) = \Sigma(0,2,4,6,7)$
8. Define HIT Ratio.
9. Write the difference between main memory and auxiliary memory.
10. What is a half adder?

PART – B

ANSWER ANY FOUR QUESTIONS **(4x7.5=30)**

11. Explain the operation of a PNP transistor with a neat sketch.
12. Explain the working of an integrator using an Op-Amp with a neat diagram.
13. a) What is a multiplexer ?
    b) Explain the working of a 4 input multiplexer. Give its logic circuit and output
14. Describe the working of a shift right 4 bits shift register with a neat diagram.
15. Name and explain the different types of registers in a computer with neat diagram

PART – C

ANSWER ANY FOUR QUESTIONS **(4x12.5=50)**

16. Explain the mechanism of current conduction in metals and hence derive the expression for the total current density in different types of semiconductor.
17. Explain with a neat diagram the working of a successive approximation A/D convertor.
18. a) Simplify using K-map, $F(A,B,C,D) = \Sigma\,(3,4,6,7,11,12,13,14,15)$ (8 marks)
    b) Convert the logical function of three variables F (A, B, C) = A+BC to standard SOP expression. (4.5 marks)
19. a) What is racing in JK Flip Flop ? (2 marks)
    b) How is it solved in JK Master Slave Flip Flop. (10.5 marks)
20. a)Explain the various components in memory hierarchy using block diagrams (6.5 marks)
    b) Discuss in detail about Timing & control in a digital computer. (6 marks)

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