

Roll No. ....

**2205**

**B. E. 5th Semester (ECE)**  
**Examination – December, 2011**

**COMPUTER ARCHITECTURE AND ORGANISATION**

**Paper : CSE-210-E**

***Time : Three hours ]***

***[ Maximum Marks : 100***

*Before answering the questions, candidates should ensure that they have been supplied the correct and complete question paper. No complaint in this regard, will be entertained after examination.*

**Note :** Attempt any *five* questions out of given eight.

1. (a) How many  $128 \times 8$  memory chips are needed to provide a memory capacity of  $4096 \times 16$  ? 3
- (b) Construct a 5 to 32 line decoder with four  $3 : 8$  line decoder with enable line and  $2 : 4$  decoder. 5

- (c) How many flip flops will be complemented in a 10 bit counter to reach the next counter after 4  
 (i) 1001100111  
 (ii) 0011111111
- (d) Realise OR gate with X OR gates only. 3
- (e) What is race around condition ? How it is removed ? 5
2. (a) Write a program loop, using a pointer and a counter, that clears to 0 the contents of hexadecimal locations through 5 FF. 10
- (b) Define and explain 10  
 (i) Micro-operation  
 (ii) Micro code  
 (iii) Micro instruction  
 (iv) Microprogram
3. (a) Compare the architecture of SISD, MISD, MIND with the help of their operation & applications. 12
- (b) Explain how pipelining increases the speed of execution. Compare pipelined processors with non pipelined processors ? 8

4. (a) What are the basic differences between a branch instruction, a call subroutine instruction and program interrupt ? 8
- (b) How main memory is organised with RAM, ROM & Cache ? Also explain the ways of its expansion. 6
- (c) Explain the concept of Associate Cache Memory. 6
5. (a) Design an any multiplier that multiplies two 4-bit numbers. Use AND gates and binary adders. 8
- (b) Write an assembly language program to evaluates square root of a binary fixed point number. 8
- (c) Why should the sign of the remainder after a division be same as the sign of the dividend ? 4
6. (a) Compare instruction level parallelism with processor level parallelism. 10
- (b) How static memory is different from dynamic memory. 6
- (c) Explain the working of MIPS. 4

**7. (a) Explain the following instructions :** 10

- (i) MOV AX, BX
- (ii) MOV AX, [BX]
- (iii) MOV [BX], AX
- (iv) MOV AX, 1248 H
- (v) MOV AX, [1248 H]
- (vi) MOV AX, [BX + 1248 H]

(b) What are memory, register & I/o reference instructions ? Explain. 10

**8. Write short notes on :** 20

- (a) Address sequencing
- (b) Amdahl's Law
- (c) Direct mapped cache organisation