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**Question Paper Code : 51381**

**B.E./B.Tech. DEGREE EXAMINATION, MAY/JUNE 2016**

**Fourth Semester**

**Computer Science and Engineering**

**CS 2253/CS 43/CS 1252 A/080250011/10144 CS 404 – COMPUTER ORGANIZATION  
AND ARCHITECTURE**

**(Common to Information Technology)**

**(Regulations 2008/2010)**

**(Also Common to PTCS 2253 – Computer Organization and Architecture for B.E. (Part-Time) Third Semester – CSE – Regulations 2009)**

**Time : Three Hours**

**Maximum : 100 Marks**

**Answer ALL questions.**

**PART – A (10 × 2 = 20 Marks)**

1. State the basic performance equation.
2. What do you mean by an interrupt ?
3. Compare hardwired and micro programmed controls.
4. What is nano programming ?
5. What is a hazard ?
6. Define exception.
7. An address space is specified by 24 bits and the corresponding memory space by 16 bits :  
How many words are there in the virtual memory and in the main memory ?



8. What is meant by an interleaved memory ?
9. Why are interrupt masks provided in any processor ?
10. What is the necessity of an interface ?

**PART – B (5 × 16 = 80 Marks)**

11. (a) (i) Explain the different types of instructions with examples. Compare their relative merits and demerits. (8)
- (ii) Explain with an example how to multiply two unsigned binary numbers. (8)

**OR**

- (b) Explain the design of ALU in detail. (16)
12. (a) (i) Explain in detail the control sequence for an unbranch instruction, unconditional and conditional branch instruction. (12)
- (ii) Give the control sequence for the instruction Add R4, R5, R6. (4)

**OR**

- (b) Discuss about the hardwired control in detail. (16)
13. (a) (i) Explain the performance of pipelining. (8)
- (ii) Explain in detail about the limitations of ILP. (8)

**OR**

- (b) Explain in detail the various pipeline hazards and methods to overcome them. (16)
14. (a) (i) Explain the need for memory hierarchy technology, with a four-level memory. (6)
- (ii) Explain the various mapping techniques associated with cache memories. (10)

**OR**

- (b) (i) Explain a method of translating virtual address to physical address. (6)
- (ii) What for replacement algorithms are used ? Explain the important ones. (10)
15. (a) What is an interrupt ? Explain the different types of interrupts and the different ways of handling interrupts. (16)

**OR**

- (b) (i) Write and explain the working of Peripheral Components Interconnect (PCI) Bus. (8)
- (ii) Discuss DMA controller with block diagram. (8)