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**Question Paper Code : 75575**

5 Year M.Sc. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2013.

Second Semester

Software Engineering

XIT 121/10677 SW 204 — COMPUTER ARCHITECTURE

(Common to 5 Year M.Sc. Information Technology)

(Regulation 2003/2010)

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Define SPEC rating.
2. What are the major functions of system software in a typical computer?
3. Define overflow and underflow.
4. What do you mean by end around carry correction?
5. Write the sequence of control steps required for three bus structures for the instruction ADD R1, R2, R3.
6. Distinguish between static and dynamic branch prediction approaches.
7. Compare SDRAM with DDE SDRAM.
8. Define the term : Spatial locality and temporal locality.
9. What are vectored interrupts?
10. Why does a DMA have priority over the CPU when both request a memory transfer?



PART B — (5 × 16 = 80 marks)

11. (a) (i) Describe various instruction formats in detail. (8)  
(ii) Discuss the various issues to be considered while designing the ISA of a processor. (8)

Or

- (b) (i) Write in detail about various addressing mode. (8 + 8)  
(ii) What are stack and queues? Explain their use and give their differences.

12. (a) (i) Describe the design of 4-bit carry look ahead adder. (8)  
(ii) Illustrate multiplication of signed 2's complement number 0111001 and 1111010 using bit-pattern of the multipliers. (8)

Or

- (b) Write the algorithm for the division of float point numbers with an example. (16)

13. (a) What are the three types of hazards that cause performance degradation in pipelined processors? Explain them in detail. (16)

Or

- (b) Explain micro programmed control organization with its advantages and disadvantages. (16)

14. (a) Define cache memory. What are the uses of cache memory? Explain various mechanism of mapping main memory addresses into cache memory addresses. (16)

Or

- (b) (i) Describe the working principles of optical disks in detail. (8)  
(ii) Explain the match logic of associative memory. (8)

15. (a) (i) Explain the block diagram of typical serial interface in detail. (8)  
(ii) Compare RISC and CISC processor. (8)

Or

- (b) Explain the use of DMA controller in a computer system with a neat diagram. (16)