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Question Paper Code : 45267

5 Year M.Sc. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2014.

Second Semester

Software Engineering

ESE 022 — COMPUTER ARCHITECTURE

(Regulation 2010)

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Give the instruction format used by Von-Neumann machine.
2. What are the advantages of subroutines in assembly language programs?
3. With example illustrate the binary subtraction using Two's complement addition for two 8 bit numbers.
4. Draw the format for double precision floating point numbers.
5. Give the micro-operations for fetch cycle.
6. What are the basic tasks of control unit?
7. Compare serial access and random access memories,
8. Comment on the performance of two level cache system.
9. Specify the important functions of I/O interface.
10. What is meant by an exception? How are exceptions handled?

PART B — (5 × 16 = 80 marks)

11. (a) (i) With examples explain the addressing modes of instructions designed for computers. (8)
- (ii) Discuss the timing and control unit in a basic computer. (8)

Or

- (b) (i) Describe the use of stack and queue structure in computer architecture. (8)
- (ii) Discuss the different types of input, output and interrupt systems designed in a computer. (8)

12. (a) Explain the design of a fast adder with suitable diagram and functional verification.

Or

- (b) (i) Illustrate with an example the multiplication of signed number with the required hardware. (12)
- (ii) Discuss the basic concept of binary division. (4)
13. (a) (i) Describe the complete design of micro-programmed control unit. (10)
- (ii) Discuss the performance issues in control section of computer architecture. (6)

Or

- (b) (i) Describe the steps in the execution of a complete instruction. (8)
- (ii) Explain the types of hazards in computers. (8)
14. (a) (i) Discuss the organization and mapping of associative memory. (9)
- (ii) Explain the working of any one secondary storage device in a computer. (7)

Or

- (b) (i) Describe the various types of semiconductor memories. (10)
- (ii) Briefly write on virtual memory. (6)
15. (a) (i) Describe the salient features of CISC processor. (10)
- (ii) Explain the interrupt handling techniques used in computers. (6)

Or

- (b) (i) With a block diagram explain the working of DMA. (9)
- (ii) Explain the basic functions of any one standard I/O interface. (7)