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Reg. No.....

Name.....

**B.TECH. DEGREE EXAMINATION, MAY 2014**

**Fourth Semester**

Branch : Computer Science and Engineering

**COMPUTER ORGANIZATION (R)**

(Old Scheme—Supplementary/Mercy Chance)

[Prior to 2010 admissions]



Time : Three Hours

Maximum : 100 Marks

**Part A**

*Answer all questions.*

*Each question carries 4 marks.*

1. What are the advantages of layered architecture ?
2. Explain the control sequence for executing the instruction ADD.
3. Explain signed division operation with an example.
4. Write a note on floating point number representation.
5. Distinguish between microprogrammed control and hardwired control.
6. Explain the three instruction classes in simple data path control.
7. Give and explain the sequence of operations for storing a word in memory.
8. Explain the cache replacement policies.
9. Describe briefly the I/O processors.
10. Explain the working of an optical mouse.

(10 × 4 = 40 marks)

**Part B**

*Answer all questions.*

*Each full question carries 12 marks.*

11. Design data paths for executing the types of instructions whose formats are given below :
  - (i) opcode, source 1, source 2, destination.
  - (ii) opcode, jump address.
  - (iii) opcode, source, memory address.

*Or*

12. Describe the structure of a typical CPU. Show how it interacts with the memory and control unit.

**Turn over**

13. Design a hardware for adding two floating point numbers. Explain the operations performed at each step.

Or

14. Explain how restoring and non-restoring divisions can be carried out in a computer? Draw the block diagrams and explain with suitable examples.
15. Develop a microprogram with a neat flow chart for implementing a micro-operation that counts the number of 1's in a register R1 and stores the result in another register R2.

Or

16. Explain horizontal and vertical micro-instructions. Compare and contrast between them in terms of hardware cost, speed and ease of microprogramming.
17. Explain the operations on cache in virtual memory environment? Explain cache coherence problem.

Or

18. (a) Bring out the salient features and differences between "Read only" and "Read/write" memories. Why are both types of memories required in a digital computer main memory system? Why are DRAMs preferred in large systems while small systems usually go in for SRAMs? (8 marks)
- (b) Explain memory hierarchy in a digital computer system. (4 marks)
19. (a) Discuss the important features of GPIB (IEEE 488.2) standard. (6 marks)
- (b) Explain the principle of optical storage devices used as input units of computer system. (6 marks)

Or

20. Explain the working of RS232C standard. Describe how the same is used in interfacing a printer to a computer system.

(5 × 12 = 60 marks)

