

Time: 3 Hours

**DECEMBER 2013**

Max. Marks: 100

*PLEASE WRITE YOUR ROLL NO. AT THE SPACE PROVIDED ON EACH PAGE IMMEDIATELY AFTER RECEIVING THE QUESTION PAPER.*

**NOTE:** There are 9 Questions in all.

- Question 1 is compulsory and carries 20 marks. Answer to Q.1 must be written in the space provided for it in the answer book supplied and nowhere else.
- The answer sheet for the Q.1 will be collected by the invigilator after 45 minutes of the commencement of the examination.
- Out of the remaining EIGHT Questions answer any FIVE Questions. Each question carries 16 marks.
- Any required data not explicitly given, may be suitably assumed and stated.

**Q.1 Choose the correct or the best alternative in the following: (2×10)**

a. What did Moore's law predict about the density and size of future generation chips?

- (A) Density decreases and size doubles
- (B) Density increases drastically and size reduces
- (C) Density increases but size remains the same
- (D) No impact on size and density

b. What technology was used to create memories?

- (A) Vacuum tube based technology
- (B) Same integrated circuit technology as the processors
- (C) Capacitor based network technology
- (D) Inductive circuitry

c. How are data and instructions stored in the Von Neumann architecture?

- (A) In separate memories
- (B) Dual ported memory
- (C) Unified read-write memory
- (D) None of these

d. What are the parts of an instruction cycle?

- (A) Fetch and Execute
- (B) Fetch, Decode and Execute
- (C) Decode and Store
- (D) Fetch, Decode, Execute and Store

e. How is data stored in the main memory?

- (A) Bytes
- (B) Words
- (C) Pages
- (D) Both (A) and (B)

- f. Which among the following is not as method of accessing data?
- (A) Sequential (B) Asynchronous  
(C) Random (D) None of these
- g. Why does DRAM support more memory cells in a given area than SRAM
- (A) DRAM has smaller cell (B) SRAM has large cell area  
(C) DRAM is more dense (D) All of these
- h. How long does a static SRM holds data?
- (A) Eternally (B) Until power is supplied  
(C) Only during manufacturing (D) None of these
- i. SCSI refers to
- (A) Serial Computer System Interface  
(B) Small Computer System Interface  
(C) Synchronous Computer System Interface  
(D) Static Computer Signal Interface
- j. Which of the following substrates for magnetic disks has better capacity to withstand shock and damage?
- (A) Resin (B) Poly-crystalline  
(C) Glass (D) Quartz

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**Answer any FIVE Questions out of EIGHT Questions.**  
**Each question carries 16 marks.**

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- Q.2** a. What are the main four components of any general purpose computer? Describe briefly. (8)
- b. Differentiate between:  
(i) Input unit and Output unit  
(ii) Third generation & Fourth generation computers (8)
- Q.3** a. Explain various addressing modes with example of each. (8)
- b. What is a queue? Explain the various operations on queue. (8)
- Q.4** a. Summarize the sequence of events involved in handling an interrupt request from a single device. (8)
- b. What do you mean by Bus Arbitration? Discuss two approaches to bus arbitration: Centralized and Distributed. (8)

- Q.5** a. Explain how PCI bus operates. (8)
- b. What is I/O interface and port? Write functions of an I/O interface. (8)
- Q.6** a. Explain briefly SRAM and DRAM. Mention the differences between these. (5)
- b. Why RAM traditionally have been organized as only one bit per chip where as ROM are organized with multiple chips per bit? (5)
- c. Describe associate-mapped and set-associative-mapped cache. (6)
- Q.7** a. Write a short note on virtual memory. (8)
- b. What are differences among positive overflow, exponent overflow and significant overflow? Explain using suitable example. (8)
- Q.8** a. Write and explain non-restoring division algorithm using a suitable example. (8)
- b. Explain tow techniques for speeding up the multiplication operation. (8)
- Q.9** a. Differentiate between Hard-wired controlled and Microprogrammed controlled microinstructions. (8)
- b. Consider the following instructions:  
Add (R3), R1  
What sequence of elementary operations are required to execute this instruction? Explain. (8)