Code: AC58/AT58   **Subject: COMPUTER ORGANIZA...**

AMIETE – CS/IT

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)**

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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

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

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)**

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Q.5 a. Explain how PCI bus operates.   **(**

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)**