Code: DC57 **Subject: COMPUTER ORGANIZA**

DipIETE – CS

| Time: 3 Hours | **DECEMBER 2012** | 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. Which of the following memory is capable of operating at electronic speed?

   (A) Magnetic Disk   **(B)** Optical Disk
   (C) Semi Conductor Memory   **(D)** None of these

b. The storage Element which holds the address of the location to or from which data are to be transferred is known as

   (A) Instruction Register   **(B)** Memory Address Register
   (C) Memory data Register   **(D)** Index Register

c. A memory bus is mainly used for communication between

   (A) Processor & Memory   **(B)** Memory & Memory
   (C) I/O devices & Memory   **(D)** none of these

d. The accuracy of the floating point numbers representable in two *16* bits words of a computer is approximately

   (A) 32 digits   **(B)** 6 digits
   (C) 8 digits   **(D)** None of these

e. Which of the following is not an octal number?

   (A) 16   **(B)** 32
   (C) 75   **(D)** none of these

f. A sequence of micro instruction is called

   (A) Micro Code   **(B)** Mnemonics
   (C) Machine Code   **(D)** None of these

g.   A Micro-Programmed control unit is

(A) Is faster than a hardwired unit
(B) Slower than a hardwired unit
(C) Difficult to implement new instruction
(D) None of these

h. A Subtractor is not usually present in a computer because

(A) It is expensive
(B) It is not possible to design it
(C) The adder will take care of the subtraction
(D) None of these

i. Any instruction should have at least

(A) 2 operands   **(B)** 1 operand
(C) 3 operands   **(D)** none of these

j. The maximum number that can be represented with *8-bit*

(A) 255   **(B)** 254
(C) 128   **(D)** None of these

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

Q.2   a. What is an instruction? Explain *three, two, one, zero*   address instructions.
          Give examples for each.   **(8)**

          b. Explain the execution of an instruction in a computer by detailing each phase.
                                                                                     (8)

Q.3   a. Write assembly language programs to evaluate the arithmetic statement
              $X = (A+B) * (C+D)$ using a general register computer with
              (i)   Two address
              (ii) Three address instructions.   **(8)**

          b. What is the difference between direct addressing and indirect addressing?   **(8)**

Q.4   a. Differentiate between Programmed I/O modes and Interrupt initiated I/O
              modes.   **(8)**

          b. Explain interrupt hardware for multiple interrupts with a single INTR line.   **(8)**

Q.5   a. Draw the block diagram of a serial interface and explain it in brief.   **(8)**

          b. What is Universal Serial Bus (USB)? Explain any three key objectives of
              designing USB.   **(8)**

Q.6 a. What is meant by DRAM and SRAM? How do they differ in their operations?
(8)

b. What are Cache Memories? Explain any two cache memory mapping functions. **(8)**

Q.7 a. With a diagram explain the organization of data on a Magnetic Hard Disk. What is seek time and latency time? **(8)**

b. With a block diagram explain the working of a 4-bit carry-look ahead adder.
(8)

Q.8 a. Using booths multiplication algorithm multiply 3 and -4 by showing all the steps. **(8)**

b. Explain IEEE standards for representing floating-point numbers in 32 bits. Explain how normalization is done in IEEE single-precision format. **(8)**

Q.9 a. Write down the sequence of control steps required to execute an instruction, Add(R_3), R_1 which adds the contents of a memory location pointed by R_3 to register R_1. **(8)**

b. Differentiate between hardwired control and microprogrammed control. **(8)**