

DipIETE – CS (Current & New Scheme)

Time: 3 Hours

JUNE 2015

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. For a processor, length of one clock cycle is 2ms what is the clock rate.

- (A) 200Hz
(C) 500MHz

- (B) 500Hz
(D) 50Hz

b. 2's complement addition of +4 and -6 is

- (A) 1101
(C) 1110

- (B) 1111
(D) 1001

c. When I/O devices and the memory share the same address space, the arrangement is called

- (A) Programmed-controlled I/O
(C) I/O mapped-memory

- (B) I/O mapped I/O
(D) Memory-mapped I/O

d. The device that is allowed to initiate data transfers on the bus at any given time is called

- (A) Bus master
(C) Bus grant

- (B) Bus slave
(D) Bus arbiter

e. A serial port is used to connect the processor to I/O devices that require transmission of data

- (A) 2 bits at a time
(C) 3 bits at a time

- (B) 1 bit at a time
(D) Multiple bits at a time

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- f. Memories that consists of circuits capable of retaining their state as long as power is applied are known as
- (A) Dynamic (B) Static
(C) Non Static (D) None of these
- g. Which is the fastest memory among the following
- (A) Magnetic disk (B) Main memory
(C) Registers (D) Primary cache
- h. The binary addresses that the processor issues for either instructions or data are called
- (A) Virtual address (B) Logical address
(C) Both (A) & (B) (D) None of these
- i. Seek time
- (A) Time required to move the read/write head to proper track
(B) Time required to move the read/write head to proper sector
(C) Both (A) & (B)
(D) None of these
- j. In double precision floating-point format mantissa fraction occupies how many bits
- (A) 64 (B) 52
(C) 23 (D) 8

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

- Q.2** a. Explain basic functional units of a computer with the help of neat block diagram. (8)
- b. What is bus? Explain single bus structure with the help of neat diagram. (8)
- Q.3** a. Explain how data transfer is achieved between memory of a computer and the outside world. (10)
- b. Define subroutine. Explain linking of subroutines using link register. (6)
- Q.4** a. Explain the use of DMA controllers in a computer system. (8)
- b. Define Bus Arbitration. Explain centralised Arbitration. (2+6)

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- Q.5** a. Explain serial port with the help of serial interface block diagram. (8)
 b. Explain the use of PCI bus in a computer system. (8)
- Q.6** a. Describe the working of static RAM cell. (4)
 b. Write the timing diagram for burst read of length 4. (6)
 c. Explain different types of read only memories. (6)
- Q.7** a. Explain virtual-memory address translation without using TLB. (8)
 b. Explain 4-bit adder with carry look ahead logic. (8)
- Q.8** a. Explain sequential circuit binary multiplier with an example. (8)
 b. Write the circuit arrangement for restoring division. (4)
 c. Write the algorithm for non restoring division. (4)
- Q.9** a. Write the control sequence for the following: (5×2)
 (i) Instruction add (R3), R4
 (ii) Unconditional Branch Instruction
 b. Write the three bus organization of the data path. (6)