

DipLETE – CS (Current & New Scheme)

Time: 3 Hours

JUNE 2017

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)

- Which of the following is lowest in memory hierarchy?
(A) Cache memory (B) Secondary memory
(C) Registers (D) RAM
- The addressing mode used in an instruction of the form ADD X Y, is
(A) Absolute (B) indirect
(C) index (D) None of these
- Von Neumann architecture is
(A) SISD (B) SIMD
(C) MIMD (D) MISD
- Cache memory acts between
(A) CPU and RAM (B) RAM and ROM
(C) CPU and Hard (D) None of these
- If memory access takes 20 ns with cache and 110 ns without it, then the ratio (cache uses a 10 ns memory) is
(A) 93% (B) 90%
(C) 88% (D) 87%
- Generally Dynamic RAM is used as main memory in a computer system as it
(A) Consumes less power (B) has higher speed
(C) has lower cell density (D) needs refreshing circuitry
- What is the content of Stack Pointer (SP)?
(A) Address of the current instruction
(B) Address of the next instruction
(C) Address of the top element of the stack
(D) Size of the stack.
- A group of bits that tell the computer to perform a specific operation is known as
(A) Instruction code (B) Micro-operation
(C) Accumulator (D) Register

- i. Floating point representation is used to store
 - (A) Boolean values (B) whole numbers
 - (C) real integers (D) integers
- j. A page fault
 - (A) Occurs when there is an error in a specific page.
 - (B) Occurs when a program accesses a page of main memory.
 - (C) Occurs when a program accesses a page not currently in main memory.
 - (D) Occurs when a program accesses a page belonging to another program.

Answer any FIVE Questions out of EIGHT Questions.

Each question carries 16 marks

- Q.2** a. Explain basic operational concepts between the processor and the memory. (8)
- b. Write a note on byte addressability, big-endian and little-endian. (8)
- Q.3** a. What is an addressing mode? Explain any four types of addressing modes. (8)
- b. Write short notes on stack. (4)
- c. Explain how to encode the instructions into 32 bits words. (4)
- Q.4** Explain the following:
 - a. Interrupt hardware (5)
 - b. Centralized arbitration (5)
 - c. DMA (6)
- Q.5** a. Explain in detail the input interface circuit. (8)
- b. Explain two types of SCSI controller. (8)
- Q.6** a. Explain associative mapping cache. (8)
- b. What do you mean by memory interleaving? Explain. (4)
- c. Explain memory management by segmentation. (4)
- Q.7** a. Explain the concepts of magnetic hard disk and optical disk. (8)
- b. Write short note on design of fast adders. (8)
- Q.8** a. Explain IEEE standard for floating-point numbers representation. (8)
- b. Differentiate between restoring and non restoring division. (8)
- Q.9** a. Explain complete execution instruction cycle. (8)
- b. Explain hard wired control unit. (8)