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M.Sc. (CSC) (Semester-II) Examination, July 2022

COMPUTER SCIENCE

(Computer System Organization & Architecture)

Time Allowed : Three Hours

Maximum Marks : 70

Minimum Passing Marks : 25

Note : Question paper is divided into four sections. Attempt question of all four sections as per given direction. Distribution of marks is given in each section.

SECTION - A

(Objective Type Questions)

Note : Attempt **any ten** questions. Each question carries **1** mark.

[10×1=10]

1 (i) In computers, subtraction is generally carried out by :

(a) 9's Complement

(b) 10's Complement

(c) 1's Complement

(d) 2's Complement

(ii) What characteristics of RAM makes it not suitable for permanent storage?

(a) too slow

(b) unreliable

(c) it is volatile

(d) too bulky

(iii) The circuit used to store one bit of data is known as :

(a) Register

(b) Encoder

(c) Decoder

(d) Flip-Flop

(iv) The average time required to reach a storage location in memory and obtain its contents is called :

(a) Seek time

(b) Turnaround time

(c) Access time

(d) Transfer time

(v) The idea of cache memory is based :

(a) on the property of locality of reference

(b) on the heuristic 90-10 rule

(c) on the fact that references generally tend to cluster

(d) all of the above

(vi) The addressing mode used in an instruction of the form ADD X Y, is :

(a) Absolute

(b) Indirect

(c) Index

(d) None of these

(vii) A register capable of shifting its binary information either to the right or the left is called a :

(a) Parallel register

(b) Serial register

(c) Shift register

(d) Storage register

(viii) 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

(ix) The memory unit that communicates directly with the CPU is called :

(a) Main memory

(b) Secondary memory

(c) Shared memory

(d) Auxiliary memory

(x) The iconic feature of the RISC machine among the following is :

(a) Reduced number of addressing modes

(b) Increased memory size

(c) Having a branch delay slot

(d) All of the above

(xi) Pipe-lining is an unique feature of :

(a) RISC

(b) CISC

(c) ISA

(d) IANA

(xii) In DMA transfers, the required signals and addresses are given by the _____ .

(a) Processor

(b) Device drivers

(c) DMA controllers

(d) The program itself

SECTION - B

(Very Short Answer Type Questions)

Note : Attempt **any five** questions. Each question carries **2** marks. (Maximum word limit is **25-30** words.) [5×2=10]

2. (i) What is Accumulator?

(ii) What is IR?

(iii) What is HLL?

(iv) What is Interpreter?

(v) What is Cache Hit?

(vi) What is EEPROM?

(vii) What is Serial Data Transfer?

SECTION - C

(Short Answer Type Questions)

Note : Attempt **any five** questions. Each question carries **4** marks. (Maximum word limit is **250** words.) [5×4=20]

3. (i) Describe logic micro operation.

   (ii) Describe arithmetic logic shift unit of CPU.

   (iii) Describe working and use of Assembler and Compiler.

   (iv) Describe Stack Organization of CPU.

   (v) Describe Arithmetic Pipelining.

   (vi) Describe synchronous data transfer scheme and its use.

   (vii) Describe various levels of cache memory.

SECTION - D

(Essay Type Questions)

Note : Attempt **any three** questions. Each question carries **10** marks. (Maximum word limit is **500** words) [3×10=30]

4. (i) (a) Explain various types of instruction codes.

(b) Explain various types of registers and its uses for CPU.

(ii) (a) Explain various instruction formats.

(b) Explain RISC processors.

(iii) (a) Explain Array processor.

(b) Explain memory interleaving.

(iv) (a) Explain concept of priority interrupt.

(b) Explain concept and use of Auxiliary and Associative memory.

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