University of Mumbai

Examination First Half 2022

Program: Electronics & Telecommunication Engineering

Curriculum Scheme: C-Scheme Rev-2019

Examination: TE Semester VI

Course Code: ECCDLO 6012 and Course Name: Computer Organization and Architecture

Time: 2:30 hours Max. Marks: 80

Q1.	**Choose the correct option for following questions. All the Questions are compulsory and carry equal marks**
1.	If the program has a total 8000 instructions and CPU has 10 average CPI with speed of 4GHz. Find the execution time of a program
Option A:	02 micro seconds
Option B:	20 micro seconds
Option C:	02 micro seconds
Option D:	40 micro seconds
2.	---- performs the computer's data processing functions
Option A:	Control Unit
Option B:	Registers
Option C:	Memory
Option D:	Arithmetic & Logic Unit
3.	--- is not the type of data transfer supported by the bus.
Option A:	Read
Option B:	Write
Option C:	Modify
Option D:	Block
4.	When the number $(12)_{10}$ is divided by $(05)_{10}$, what is the value stored in the registers A & Q, in case of Restoring division algorithm?
Option A:	A= 0010, Q= 0010
Option B:	A= 0011, Q= 0011
Option C:	A= 0010, Q= 0001
Option D:	A= 0001, Q= 0010
5	How many bits are used to represent "Exponent" in Double precision IEEE 754 floating point standard?
Option A:	8
Option B:	127
Option C:	11
Option D:	16
6	If cache memory has 8 lines, then 26th block of main memory would be placed in which line of cache memory, in case of direct mapping function?
Option A:	1
Option B:	2
Option C:	3
Option D:	4

7	In the memory hierarchy, -------- is most nearest to the processor.
Option A:	Register
Option B:	DRAM
Option C:	Cache
Option D:	SRAM
8	Which is not the part of CPU?
Option A:	ALU
Option B:	Flash memory
Option C:	Registers
Option D:	Control Unit
9	---- register stores internally the address of memory location to be accessed for read/write operation.
Option A:	MDR
Option B:	SI
Option C:	MAR
Option D:	AX
10.	In which of the Flynn's classification, we find multiple instruction streams operate on multiple data streams?
Option A:	MISD
Option B:	MIMD
Option C:	SISD
Option D:	SIMD

Q2.	**Solve any Four out of Six** **5 marks each**
A	Explain Amdahl's law.
B	Define Arithmetic mean, Harmonic mean, Geometric mean, Rate metric and Speed metric.
C	Explain various components of Computer.
D	Draw the flowchart of Non-Restoring algorithm and explain the same.
E	Perform -7 X 4 using Booth's multiplication algorithm.
F	Differentiate between SRAM and DRAM.

Q3.	**Solve any Two Questions out of Three** **10 marks each**
A	Explain the term Benchmarks and discuss the various SPEC suites
B	With neat diagram, explain the Instruction Cycle State diagram.
C	Discuss Hardwired and Microprogrammed control unit.

Q4.	**Solve any Two Questions out of Three** **10 marks each**
A	Explain various cache mapping techniques in detail.

B	List and explain the different microinstructions generated for the execution of an instruction ADD R1, [R2].
C	Differentiate between Multiprocessor and Multicore systems. Also explain the structure/organization of each system.