R22

Code No: 183AH

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B. Tech II Year I Semester Examinations, February - 2024

COMPUTER ORGANIZATION AND ARCHITECTURE

(Common to CSE(AI&ML), AI&DS, AI&ML)

Time: 3 Hours **Max. Marks: 60**

Note: This question paper contains two parts A and B.
i) **Part- A** for 10 marks, ii) **Part - B** for 50 marks.

- Part-A is a compulsory question which consists of ten sub-questions from all units carrying equal marks.
- Part-B consists of **ten questions** (numbered from 2 to 11) **carrying 10 marks each**. From each unit, there are two questions and the student should answer one of them. Hence, the student should answer five questions from Part-B.

PART- A

(10 Marks)

1.a)	What is a register transfer language?	[1]
b)	Define computer registers.	[1]
c)	What is Micro-programmed control Unit?	[1]
d)	List any two types of logical and bit manipulation instructions.	[1]
e)	What is the purpose of data representation in computers?	[1]
f)	Give an example of a real-world application that heavily relies on floating-point arithmetic.	[1]
g)	What is the purpose of data types in computer programming?	[1]
h)	Why is cache memory faster than main memory?	[1]
i)	List the key features of an array processor.	[1]
j)	Define the term "RISC".	[1]

PART-B

(50 Marks)

2.a)	Give a detailed overview of digital computers, including their key characteristics and applications.	
b)	Compare computer design with computer architecture.	[6+4]

OR

3.a)	Describe the phases of instruction cycle.	
b)	Discuss about arithmetic micro operations.	[5+5]

4.	Explain the following terms. a) Design of control unit. b) Micro program example.	[5+5]

OR

5.	Explain various addressing modes with examples.	[10]

6.	Justify the inclusion of a separate decimal arithmetic unit in modern computer architectures, citing real-world applications.	[10]

OR

7.a) Discuss the challenges associated with decimal arithmetic operations.
b) Discuss any common multiplication algorithm used in computer arithmetic. [5+5]

8.a) Differentiate between Main Memory and Auxiliary Memory.
b) Explain the importance of memory hierarchy and its importance in data storage. [4+6]

OR

9.a) Write short notes on programmed I/O mode of transfer.
b) Explain importance of the I/O Interface in ensuring effective communication between a computer system and external devices. [5+5]

10.a) Explain about Inter-processor communication and synchronization in multiprocessors.
b) Differentiate between arithmetic pipeline and instruction pipeline. [5+5]

OR

11.a) State and explain the characteristics of multi-processors.
b) Explain RISC characteristics with its advantages [5+5]

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