School of Engineering and Technology

First Year Department (CSE/CSE-AIML/CSE-AIDS/CSE-DS/ECE/EEE)
BTech - Semester-I

Question bank

Course Title: Computer Organization and Architecture

Course Code: 24BTPHY105

Module -1: Digital Computers

Digital Computers: Introduction—Block diagram of Digital Computer—Definition of Computer Organization—Computer Design and Computer Architecture.

Data Representation: Data types — Complements Fixed Point Representation Floating Point representation. Computer Arithmetic: Addition and subtraction—multiplication Algorithms— Division Algorithms—Floating point Arithmetic operations — Decimal Arithmetic unit— Decimal Arithmetic operations.

SL NO	QUESTIONS	MARKS	COS	BL
1.	What are the main components of a digital computer as depicted in its block diagram?		CO3	L2
2.	Explain the difference between computer organization, computer design, and computer architecture.		CO3	L2
3.	Given a binary number in fixed-point representation, convert it into its floating-point representation.		CO3	L3
4.	Analyze how the complement system is used in subtraction operations in fixed-point arithmetic.		CO3	L2
5.	Evaluate the pros and cons of floating-point representation compared to fixed-point representation in digital computers.		CO3	L2
6.	Design a block diagram for a digital computer that efficiently supports both fixed-point and floating-point arithmetic operations.		CO3	L2
7.	List the different types of data representations used in digital computers.		CO3	L2
8.	Describe how multiplication algorithms differ from division algorithms in digital computers.		CO3	L3
9.	Perform a floating-point multiplication operation on the numbers 2.5×10^3 and 4.0×10^{-2} using the IEEE 754 standard.		CO3	L3
10.	Compare the steps involved in performing decimal arithmetic operations versus binary arithmetic operations in a digital computer.		CO3	L2

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Module -2: Input-Output Organization

Input-Output Organization: Input-Output Interface—Asynchronous data transfer—Modes of Transfer—Priority Interrupt —Direct memory Access. Memory Organization: Memory Hierarchy—Main Memory—Auxiliary memory—Associate Memory—Cache Memory.

SL NO	QUESTIONS	MARKS	COs	BL
01.	What are the different modes of data transfer in input-output systems?		CO3	L2
02.	Explain how asynchronous data transfer differs from synchronous data transfer.		CO3	L2
03.	Given a scenario where multiple devices request access to the CPU, determine how a priority interrupt system would handle these requests.		CO3	L2
04.	Analyze the role of Direct Memory Access (DMA) in reducing the CPU's workload during data transfers.		CO3	L2
05.	Evaluate the effectiveness of different memory hierarchies in improving system performance.		CO3	L2
06.	Design a memory hierarchy that optimizes speed and cost for a high-performance computing system.		CO3	L2
07.	List the different types of memory in a typical memory hierarchy.		CO3	L2
08.	Describe the role of cache memory in speeding up data access in a computer system.		CO3	L2
09.	Apply the concept of associative memory to solve a problem involving fast data retrieval in a database system.		CO3	L2
10.	Compare and contrast the characteristics of main memory and auxiliary memory.		CO3	L2