Reg. No.																

Question Paper Code	14004

B.E. / B.Tech. - DEGREE EXAMINATIONS, NOV / DEC 2025

Third Semester

Computer Science and Business Systems

24CBPC302 - COMPUTER ORGANIZATION AND ARCHITECTURE

Regulations - 2024

Duration: 3 Hours | Max. Marks: 100

PART - A (MCQ) (10 × 1 = 10 Marks)

Answer ALL Questions

		Marks	K – Level	CO
1.	What is computer organization? (a) Structure and behavior of a computer system as observed by the user. (b) Structure of a computer system as observed by the developer (c) Structure and behavior of a computer system as observed by the developer (d) All of the above	1	K1	CO1
2.	Which register holds the address of the next instruction to be executed? (a) Program counter (b) Instruction register (c) Accumulator (d) Memory address register	1	K1	CO1
3.	Show the Floating point representation is used to store (a) Boolean values (b) Whole numbers (c) Real numbers (d) Integers	1	K2	CO2
4.	Which one is Subtraction is generally carried out by (a) 9's Complement (b) 10's Complement (c) 1'Complenmt (d) 2's Complement	1	K1	CO2
5.	Which one of the following control units is fast in speed? (a) Hardwired control unit (b) Micro programmed control unit (c) Both a and b (d) None of the above	1	K1	CO3
6.	Tell Data hazards occur when _____ (a) Greater performance loss (b) Pipeline changes the order of R/W access to operands (c) Some functional unit is not fully pipelined (d) Machine size is limited	1	K1	CO3
7.	Choose the best one of the following. I / O hardware contains _____ (a) Bus (b) Conttroller (c) I / O Port and its registers (d) All the above	1	K1	CO4
8.	Interrupts which are initiated by an instruction are (a) Internal (b) External (c) Hardware (d) Software	1	K1	CO4
9.	Tell Virtual memory is (a) An extremely large main memory (b) An extremely large secondary memory (c) An illusion of an extremely large memory (d) None of these	1	K1	CO5
10.	Choose the best answer. Cache Memory _____ (a) Has greater capacity than RAM (b) Is faster to access than CPU registers (c) Is Permanent storage (d) Faster to access than RAM	1	K1	CO6

PART - B (12 × 2 = 24 Marks)

Answer ALL Questions

11.	Define Computer Architecture.	2	K1	CO1
12.	Explain addressing mode? Mention most importance of them.	2	K2	CO1
13.	Infer the truth table for Subtraction.	2	K2	CO2
14.	List out the steps involved in refined Multiplication.	2	K1	CO2
15.	What is hard-wired control? How is it different from micro programmed control?	2	K1	CO3
16.	What is meant by data and control hazard in pipelining?	2	K1	CO3
17.	What are the components of an I / O interface?	2	K1	CO4
18.	Explain SCII.	2	K2	CO4

19.	What is Virtual Memory?		*2*	*K1*	*CO5*
20.	List out the memory Technologies.		*2*	*K1*	*CO5*
21.	Explain Flynn's Classification.		*2*	*K2*	*CO6*
22.	List out the different I/O transfer mechanisms available.		*2*	*K1*	*CO6*

PART - C (6 × 11 = 66 Marks)

Answer ALL Questions

23.	a)	Explain the various functional units of a computer system with a neat block diagram.	*11*	*K2*	*CO1*
		OR			
	b)	Explain the need for addressing in a computer system. Explain the different addressing modes with examples.	*11*	*K2*	*CO1*
24.	a)	Solve the following Problem using sequential multiplication with the detailed steps. 3 * 7.	*11*	*K3*	*CO2*
		OR			
	b)	Derive the answer for (+4) x (+2) using Booth's algorithm.	*11*	*K3*	*CO2*
25.	a)	Explain the design of hardwired control unit.	*11*	*K2*	*CO3*
		OR			
	b)	Explain the techniques for handling data and instruction hazards in pipelining.	*11*	*K2*	*CO3*
26.	a)	Explain the different types of interrupts and the different ways of handling interrupts.	*11*	*K2*	*CO4*
		OR			
	b)	Demonstrate about DMA controller with block diagram.	*11*	*K2*	*CO4*
27.	a)	Summarize the concept of Hierarchical memory organization.	*11*	*K2*	*CO5*
		OR			
	b)	Demonstrate the concept of Replacement algorithms.	*11*	*K2*	*CO5*
28.	a)	Apply the methodology proposed by Flynn in classifying the computer architecture.	*11*	*K3*	*CO6*
		OR			
	b)	Construct the various mapping technique associated with cache memories.	*11*	*K3*	*CO6*