QP Code: R264A014 | Reg. No | | | | | | | | | | | AY 23

GANDHI INSTITUTE OF ENGINEERING AND TECHNOLOGY, ODISHA, GUNUPUR
(GIET UNIVERSITY)

B. Tech (Fourth Semester – Regular/Supplementary) Examinations, April – 2026

23BCSPC24002/23BCMPC24002/23BCDPC24002 – Computer Organisation and Architecture
(CSE, CSE(AIML), CSE(DS))

Time: 3 hrs | Maximum: 60 Marks

Answer ALL questions

(The figures in the right hand margin indicate marks)

PART – A **(2 x 5 = 10 Marks)**

Q.1. Answer ***ALL*** questions		CO #	Blooms Level
a.	Suppose you have a task that takes 120 seconds to complete on a single processor. You find that 90% of this task can be parallelized. What is the speedup you can achieve if you use 4 processors .	CO1	K3
b.	Write the addressing mode of following instructions. MOV R1, (R2) and LOAD R1, LOC	CO2	K2
c.	Represent the number -8.75 in single precision floating point representation.	CO3	K4
d.	Differentiate between single bus and multiple bus organization.	CO4	K2
e.	Consider a cache memory in the system. The hit ratio for cache is 0.7 , the cache access time is 10ms and main memory access is 100 ms then find out performance with cache.	CO5	K3

PART – B **(10 x 5 = 50 Marks)**

Answer ***ALL*** the questions		Marks	CO #	Blooms Level
2. a.	Write three address, two address , one address and zero address instruction to implement X=AB+CD.	5	CO1	K3
b.	Differentiate between RISC and CISC processor.	5	CO1	K2
	(OR)			
c.	What is Byte addressability? Discuss each type with example	5	CO1	K1
d.	How do we improve performance of the computer system?	5	CO1	K3
3.a.	Write assembly language program for addition of an array of data bytes which are stored in memory.	5	CO2	K4
b.	What is instruction set? Discuss different types of it.	5	CO2	K1
	(OR)			
c.	Write assembly language program to find the largest number of the given data series having 20 numbers which are stored in memory.	5	CO2	K4
d.	Write any five addressing mode with two examples of each.	5	CO2	K2
4.a.	Design a 16 bit fast adder by using 4 bit fast adder and calculate number of gate delay.	5	CO3	K4
b.	Find out multiplication of 9 with -7 using Booth algorithm.	2	CO3	K3
	(OR)			
c.	Divide 15 by 4 by using non- restoring division algorithm.	5	CO3	K3
d.	Write down rules of floating point number addition and subtraction.	5	CO3	`K1

5.a.	Draw and explain Single Bus Organization of a computer system. Write different control signals generated during execution of ADD R1, R2	8	CO4	K4
b.	What are the control signals associated with MDR in CPU?	2	CO4	K1
	(OR)			
c.	Design and explain Hardwired control unit.	5	CO4	K4
d.	What is Pipelining Architecture? What are different hazards are associated with it?	5	CO4	K2
6.a.	Discuss different types of memory used in our computing system.	5	CO5	K1
b.	What is Virtual Memory? How paging technique is used for memory management?	5	CO5	K2
c.	A system is having 64 KB main memory and 4KB of cache memory. If block size is 16 words, then how the cache direct mapping, associative mapping is used to memory management.	5	CO5	K3
d.	Write short notes on USB.	5	CO5	K1

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