

**BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI
(MID SEMESTER EXAMINATION)**

CLASS: B.TECH
BRANCH: ECE/BT/CP&P/ME/PIE

SEMESTER: V
SESSION: MO/2022

SUBJECT: CS203 COMPUTER ORGANIZATION AND ARCHITECTURE

TIME: 2 HOURS

FULL MARKS: 25

INSTRUCTIONS:

1. The total marks of the questions are 25.
 2. Candidates attempt for all 25 marks.
 3. Before attempting the question paper, be sure that you have got the correct question paper.
 4. The missing data, if any, may be assumed suitably.
 5. Tables/Data hand book/Graph paper etc. to be supplied to the candidates in the examination hall.
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		CO	BL
Q1 (a)	What number can be the minimum decimal equivalent of the number $(243)_x$	[2] 3	4
Q1 (b)	Represent $(-7)_8$ in signed magnitude, 2's complement, and 1's complement	[3] 3	3
Q2 (a)	Briefly explain how ALU works.	[2] 2	1
Q2 (b)	Explain the Von Neumann Architecture and Why it is the significant growth in computer architecture?	[3] 1	2
Q3 (a)	Explain the mechanism of a full-adder.	[2] 2	1
Q3 (b)	Consider this structure struct random { short int a; int b; char c; short int d; int e; }; Consider a 32-bit Computer with byte addressability and aligned words. How many words and bytes do we need to represent? If the address begins with 100, at which address we will find the variable d?	[3] 3	4
Q4 (a)	Explain the lifecycle of an instruction with an example in case of straight-line sequencing and branching	[2] 2	4
Q4 (b)	In IEEE Single Precision floating point representation, explain with an example where and how the E (exponent) can be negative.	[3] 2	5
Q5 (a)	What is the pass by name? How is it different from others?	[2] 1	2
Q5 (b)	Write Assembly code for $(A+E) / (B*(C-D))$ in zero and two addressing format	[3] 1	5

::: 15/10/2022 E :::