

BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI
(END SEMESTER EXAMINATION)

CLASS: BTECH
BRANCH: EEE/ECE/MECH

SEMESTER :VI
SESSION : SP/2023

SUBJECT: CS203 COMPUTER ORGANIZATION & ARCHITECTURE

TIME: 3 Hours

FULL MARKS: 50

INSTRUCTIONS:

1. The question paper contains 5 questions each of 10 marks and total 50 marks.
 2. Attempt all questions.
 3. The missing data, if any, may be assumed suitably.
 4. Before attempting the question paper, be sure that you have got the correct question paper.
 5. Tables/Data hand book/Graph paper etc. to be supplied to the candidates in the examination hall.
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		CO	BL
Q.1(a)	Show the IEEE 754 binary representation of the number $(-1.75)_{10}$ in single & double precision. [5]	2	3
Q.1(b)	Explain the Booth's multiplication algorithm with a suitable example. What are the advantages of this multiplication method? [5]	2	2
Q.2(a)	Represent the following expression using Zero Address, One Address and Two Address instruction format: $Z = A * (C - D) / E + F$ [5]	1	3
Q.2(b)	What is addressing mode? What are different types of addressing modes available in RISC and CISC style computers? An instruction is stored at the location 300 with its address field at location 301. The address field has the value 400. A processor register R1 contains the number 200. Evaluate the effective address if the addressing mode of the instruction is (i) Direct, (ii) immediate and (iii) Relative. [5]	2	1,3
Q.3(a)	What are the differences between Hardwired and microprogram control units? Write down advantages and disadvantages of Hardwired control units. [5]	3	1
Q.3(b)	What are the various stages in a Pipeline execution? Explain the different types of the pipeline hazards? [5]	4	1
Q.4(a)	What is meant by Cache Mapping? What is the advantage and disadvantage of this mapping technique in comparison to the other mapping techniques? Explain Direct Cache Mapping technique with examples. [5]	5	1
Q.4(b)	Explain the working of the DMA controller in detail. [5]	2	1
Q.5(a)	Explain the issue of cache coherence in a shared multiprocessor environment. [5]	5	2
Q.5(b)	Explain Flynn's classification of computers with the help of suitable diagrams. [5]	4	2

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