

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

**CLASS: BTECH
BRANCH: CSE/IT**

**SEMESTER: IV
SESSION : SP/2020**

SUBJECT : CS203 COMPUTER ORGANIZATION ARCHITECTURE

TIME: 2 HOURS

FULL MARKS: 25

INSTRUCTIONS:

1. The total marks of the questions are 25.
 2. Candidates may 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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| Q1 | (a) Differentiate between Computer Organization and Architecture. | [2] | CO |
| Q1 | (b) Explain the functioning of IR, MAR, MDR registers present in CPU. | [3] | CO1 |
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| Q2 | (a) Define ranges of 'n' bit binary numbers in Unsigned, Signed-Magnitude, 1's Complement and 2's complement representation of numbers. | [2] | CO3 |
| Q2 | (b) i) Perform following operations in 2's complement representation of binary numbers: (+7) + (-3) and (-3) - (-7)
ii) Convert number (712) ₈ to () ₆ | [3] | CO3 |
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| Q3 | (a) Write algorithm for multiplication of positive binary numbers with example. | [2] | CO2 |
| Q3 | (b) Draw and explain the sequential circuit of binary multiplier. | [3] | CO4 |
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| Q4 | (a) What do you mean by immediate addressing mode? Explain with example | [2] | CO2 |
| Q4 | (b) 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 | [3] | CO3 |
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| Q5 | (a) What do you mean by zero and one addressing formats of codes? | [2] | CO2 |
| Q5 | (b) Write code in zero and one addressing format for the expression $x = (a+b)/(c*t)$ | [3] | CO3 |

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