

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

CLASS: IMSC  
BRANCH: CQEDS

SEMESTER : I  
SESSION : MO/2025

SUBJECT: ED25109 INTRODUCTION TO COMPUTING & PROGRAMMING

TIME: 02 Hours

FULL MARKS: 25

**INSTRUCTIONS:**

1. The question paper contains 5 questions each of 5 marks and total 25 marks.
  2. Attempt all questions.
  3. The missing data, if any, may be assumed suitably.
  4. Tables/Data handbook/Graph paper etc., if applicable, will be supplied to the candidates
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		CO	BL
Q.1(a)	Differentiate between hardware and software with example.	[2]	1 2
Q.1(b)	Explain the role of the Central processing unit (CPU), Arithmetic Logic Unit (ALU) and Control Unit (CU) in the Von Neumann system?	[3]	1 2
Q.2(a)	Perform the following number system conversions as directed: a) Represent the decimal number (-25) using 8-bit two's complement form. b) Convert the binary number $(101101.101)_2$ into its decimal form. c) Convert the octal number $(356)_8$ into its binary form. d) Convert the hexadecimal number $(A3)_{16}$ into binary form.	[2]	1 3
Q.2(b)	Perform the following number system conversions as directed: a) Subtract the binary number 011010 from 101101 using the two's complement method. b) Perform the binary division of $110110_2 \div 101_2$ and determine the quotient and remainder. Show your calculation step-by-step. c) Find the product of $1001_2 \times 011_2$ using bitwise multiplication.	[3]	1 3/4
Q.3(a)	Perform the binary addition of 1010110 and 1101101. Show all steps clearly and state whether carry-out or overflow occurs.	[2]	1 3
Q.3(b)	List the main steps involved in executing a single instruction in a CPU.	[3]	1 2
Q.4(a)	Define data and information in the context of computer systems.	[2]	1 2
Q.4(b)	Define the role of input device and output device in a computer system. List at least five examples of input devices and five examples of output devices.	[3]	1 2
Q.5(a)	State the difference between RAM and ROM in terms of data volatility.	[2]	1 2
Q.5(b)	Explain the concept of memory hierarchy in a computer system.	[3]	1 2

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