

R.N.G.PATEL INSTITUTE OF TECHNOLOGY-RNGPIT
(An Autonomous Institute U/s UGC Act 1956)

ONLINE MCA SEMESTER-I, SEMESTER END EXAMINATION – WINTER 2025

SUBJECT CODE:1MCA102

DATE: 20-01-2026

SUBJECT NAME: FUNDAMENTAL OF COMPUTER ORGANIZATION

TIME: 09:00 AM to 11:00 AM

TOTAL MARKS: 50

Instructions

1. It is **compulsory** for students to write **Enrolment No. /Seat No.** on the question paper.
2. Write answers of **Section A** and **Section B** in **separate answer books**.
3. Attempt all questions from both **Section A** and **Section B**.
4. Each section carries **25 marks**, with a total of **50 marks** for the examination.
5. The figures to the right of each question indicate full marks, make suitable assumptions with justification.
6. BL - Bloom's Taxonomy Levels (R-Remember, U-Understanding, A –Application, N –Analyze, E – Evaluate, C -Create), CO - Course Outcomes.

SECTION A

		Marks	BL	CO
Q.1	(a) Explain 1's complement and 2's complement with an example.	05	U	1
Q.2	Attempt Any Two	[10]		
	(a) Explain Identity law, Null law, and Idempotent law with suitable examples.	05	U	2
	(b) Minimize the following Boolean function using Karnaugh map: $F(A, B) = \sum m(0, 1, 2)$	05	A	2
	(c) State De Morgan's theorems. Verify any one theorem using a truth table.	05	R	2
Q.3	Attempt Any Two	[10]		
	(a) Explain combinational circuit with an example.	05	U	3
	(b) Define a flip-flop. Name any two types of flip-flops.	05	R	3
	(c) Describe the working of a Half Adder with truth table and logic diagram.	05	U	3

SECTION B

	Marks	BL	CO
Q.4 (a) Draw the circuit diagram using various logic gates of the following Boolean function: 1. $F=AB+CD$ 2. $F=(A+B) (C\oplus D)$ 3. $F=A'B+AB'$ 4. $F=[(A'+B) + C] D$ 5. $F=(A+B') (A'+B)$	05	A	1
Q.5 Attempt Any Two	[10]		
(a) Describe the notation and syntax of RTL with examples.	05	U	4
(b) Explain the steps involved in the memory read operation with a suitable example.	05	U	4
(c) Explain Arithmetic microoperations in detail.	05	U	4
Q.6 Attempt Any Two	[10]		
(a) List and define any five types of computer registers used in a CPU.	05	R	5
(b) Define Instruction. Write a short note on the Instruction Cycle.	05	R	5
(c) List different addressing modes. Write about any two addressing modes with a suitable example.	05	R	5
