

**DIPLOMA EXAMINATION IN ENGINEERING/TECHNOLOGY/MANAGEMENT/
COMMERCIAL PRACTICE, NOVEMBER - 2024**

LOGIC SYSTEM DESIGN & COMPUTER ORGANIZATION

[Maximum marks: 75]

[Time: 3 Hours]

PART A

I. Answer all the following questions in one word or one sentence. Each question carries 1 mark. (9 x 1 = 9 Marks)

		Module outcome	Cognitive level
1	How to find 2's complement of a number?	M1.03	U
2	What are the rules for binary addition?	M1.04	R
3	$\overline{A + B} = \dots\dots\dots$	M2.02	R
4	Give examples of sequential circuits.	M2.06	U
5	Name the universal gates.	M2.06	R
6	Name the functional units of a computer.	M3.01	R
7	Define the types of system bus.	M3.03	R
8	Name the methods to generate control signals.	M4.03	R
9	Define Flynn's classification.	M4.05	R

PART B

II. Answer any eight questions from the following. Each question carries 3 marks. (8 x 3 = 24 Marks)

		Module outcome	Cognitive level
1	Convert 102_{10} to binary.	M1.01	A
2	Explain NAND gate.	M1.05	U
3	Give examples for alpha numeric codes.	M1.02	U
4	Explain NOR gate.	M2.01	U
5	Prepare notes on Half Adder.	M2.05	U
6	Give examples for SOP & POS.	M2.03	U
7	Draw the memory hierarchy based on processor speed.	M3.04	U
8	Explain the concept of DMA.	M3.06	U
9	What is instruction pipelining?	M4.04	U
10	Compare Hardwired and microprogrammed control signal generation.	M4.03	U

PART C

Answer all questions. Each question carries seven marks.

(6 x 7 = 42 Marks)

		Module outcome	Cognitive level
III	Convert (i) 0xABC to Binary (ii) 123_8 to Hex numbers. OR	M1.01	A
IV	Convert (i) 10110.011_2 to Decimal (ii) 53.43_{10} to Binary numbers	M1.01	A
V	Prepare notes on Logic gates. OR	M1.05	U
VI	What are the different types of binary codes? Explain.	M1.02	U
VII	Reduce the Boolean expression using K-MAP, $Y = \bar{A}BC + ABC + \bar{A}\bar{B}C + AB\bar{C} + A\bar{B}C$ OR	M2.04	A
VIII	Find the Boolean expression for $Y = \sum(0,13,5,6,7)$.	M2.03	A
IX	Explain the basic theorems of Boolean algebra. OR	M2.02	U
X	Compare Combinational circuits & Sequential circuits.	M2.06	U
XI	Explain basic operational concepts of a computer system. OR	M3.02	U
XII	Write notes on program controlled and interrupt driven IO.	M3.05	U
XIII	Explain instruction pipelining in detail. OR	M4.04	U
XIV	Explain Von-Neumann architecture of computers.	M4.01	U
