

BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI
(MID SEMESTER EXAMINATIONS SP/2025)

CLASS: IMSc
BRANCH: PHYSICS

SEMESTER : IV
SESSION : SP/2025

SUBJECT: PH202 DIGITAL SYSTEMS AND APPLICATIONS

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

		CO	BL
Q.1(a)	Classify IC on the basis of chip size.	[2]	1 1
Q.1(b)	Find the expression for the deflection of spot produced on CRO screen.	[3]	1 5
Q.2(a)	Find the missing value in the expression: $(21.357)_8 = (?)_2$	[2]	2 5
Q.2(b)	$(100111011.10011)_2 = (?)_{16}$	[3]	2 5
Q.3(a)	Explain XOR and XNOR	[2]	2 2
Q.3(b)	Prove the universality of NAND gate	[3]	2 5
Q.4(a)	Define the following term: Literal, normal term, minterm, maxterm.	[2]	2 2
Q.4(b)	State and explain DeMorgan's 1 st and 2 nd theorem.	[3]	2 2
Q.5(a)	What do you understand by parity and parity checkers?	[2]	2 2
Q.5(b)	Explain BCD code, 1's complement and 2's complement. Find 2's complement of $(1010)_2$	[3]	3 2,5

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