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

CLASS: IMSc   SEMESTER: III
BRANCH: PHYSICS   SESSION: MO/2022

SUBJECT: PH202 DIGITAL SYSTEMS AND APPLICATIONS

TIME: 2 HOURS   FULL MARKS: 25

INSTRUCTIONS:
1. The total marks of the questions are 25.
2. Candidates 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.

				CO	BL
Q1	(a)	Explain how CRO can be used to measure following parameters. (i) frequency and phase by Lissajous pattern (ii) rms value of a sine wave	[2]	CO1	Evaluation
Q1	(b)	What do you understand by SSI, MSI, LSI, VLSI, ULSI? Give examples of each.	[3]	CO1	Comprehensive
Q2	(a)	Differentiate between analog signal and digital signal? Define duty cycle and show in the waveform.	[2]	CO2	Knowledge
Q2	(b)	Describe different types of ICs with examples. What do you understand by scales of ICs.	[3]	CO1	Comprehensive
Q3	(a)	What are universal gates? Describe its circuits, truth tables. Form OR gate using universal gates.	[2]	CO2	Analysis
Q3	(b)	State and prove both Demorgan's theorems. Draw the circuit and truth tables. What are its applications?	[3]	CO2	Applications
Q4	(a)	Distinguish between Combinational and sequential circuits.	[2]	CO3	Comprehensive
Q4	(b)	Explain Multiplexer with circuits, truth tables and Boolean equations. Where it is used?	[3]	CO3	Applications
Q5	(a)	What is K-map? Explain with examples. What are its advantages?	[2]	CO2	Applications
Q5	(b)	Solve $(E64B)_{16} = (?)_8$	[3]	CO2	Evaluation

:::::: 28/09/2022 ::::::M