

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

CLASS: BCA
BRANCH: BCA

SEMESTER : II
SESSION : SP/2024

SUBJECT: CN123 BASICS OF DIGITAL COMPUTER AND LOGIC DESIGN

TIME: 3 Hours

FULL MARKS: 50

INSTRUCTIONS:

1. The question paper contains 5 questions each of 10 marks and total 50 marks.
 2. Attempt all questions.
 3. The missing data, if any, may be assumed suitably.
 4. Before attempting the question paper, be sure that you have got the correct question paper.
 5. Tables/Data hand book/Graph paper etc. to be supplied to the candidates in the examination hall.
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		CO	BL
Q.1(a)	Describe in detail about weighted and non-weighted binary codes with examples.	[5] 2	1,2
Q.1(b)	Define parity and design a three-bit parity generator and four-bit parity checker using odd parity bit.	[5] 1,3	1,3
Q.2(a)	Write the POS representation of the following SOP function: $f(x, y, z) = \sum m(0, 1, 3, 5, 7)$	[5] 3	3
Q.2(b)	Simplify the Boolean expression using K-map and implement using NAND gates $F(A, B, C, D) = \sum m(0, 2, 3, 8, 10, 11, 12, 14)$	[5] 3	2,3
Q.3(a)	Implement the following Boolean function using 8:1 multiplexer $F(A, B, C, D) = A'BD' + ACD + A'C'D + B'CD$	[5] 3	4
Q.3(b)	Design 4 bit parallel Adder and explain the operation in detail?	[5] 1,2	3
Q.4(a)	Draw and explain the operation of a Master-Slave JK flip flop.	[5] 1,2	2
Q.4(b)	Design a 3 bit binary synchronous counters with T-flip flop?	[5] 3	2,3
Q.5(a)	Explain different types ROMs	[5] 2	1,2
Q.5(b)	Describe about the following programmable logic devices: (i) PLA (ii) PAL	[5] 2	1,2

:24/04/2024:E