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

CLASS: BCA **SEMESTER : II/ADD**
BRANCH: BCA **SESSION : SP/2025**

SUBJECT: CN131 MATHEMATICS FOR COMPUTING 1

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)	i) Find the set A – B, for the given sets A = {x | x is an integer, $1 \le x \le 6$} and B = {x | x is an even integer, $2 \le x \le 8$} ii) If set M = {x | x is a prime number less than 20} and set N = {x | x is an odd number less than 10}, what is M ∩ N?	[2]	CO3	2
Q.1(b)	Verify $(A \cap B)^c = A^c \cap B^c$ for the given sets A = {11, 12, 13}, B = {7, 8} and the universal set U = {7, 8, 9, 10, 11, 12, 13 }.	[3]	CO3	3
Q.2(a)	Determine whether the following relations are function or not. i)R={(0,0),(1,1),(2,2),(3,3)} ii) R={(1,2),(2,3),(7,4),(1,5)}	[2]	CO3	2
Q.2(b)	i) Find floor and ceiling function of 6.47. ii)Find the value of ⌊0.6667⌋ + ⌊6.6⌋ iii)Draw the graph of floor function and ceiling function.	[3]	CO3	2
Q.3(a)	Define Symmetric and transitive closure.	[2]	CO3	1
Q.3(b)	Verify the given relation R= {(1, 3), (2, 4), (3, 1), (4, 2), (5, 4),(1,1),(2,2)} defined on a set A= {1, 2, 3, 4, 5} is an equivalence relation or not.	[3]	CO3	2
Q.4(a)	Define Partial order relation.	[2]	CO3	1
Q.4(b)	Find the composition of the following relations ROS and SOR. R = {(4, a), (4, b), (5, c), (6, a), (6, c)} S = {(a, l), (a, n), (b, l), (b, m), (c, l), (c, m), (c, n)}	[3]	CO3	3
Q.5(a)	If $n_{p_7} = n_{p_6}$ find the value of n.	[2]	CO2	3
Q.5(b)	Find the number of four-letter words with or without meaning, which can be made out of letters of the word ROSE, where the repetition of letters is not allowed.	[3]	CO2	3

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