

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

CLASS: BCA
BRANCH: BCA

SEMESTER: III
SESSION: MO/2025

SUBJECT: CN207 MATHEMATICS FOR COMPUTING

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
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Q.1(a) Determine the truth or falsity of each of the following statements: [2] CO BL
CO1 L2

- (i) $6 < 5$ or 6 is a multiple of 2
- (ii) 3 is odd and 7 is not an integer

Q.1(b) $p * q$ is defined by the following truth table: [3] CO1 L3

p	q	$P * q$
T	T	F
T	F	T
F	T	F
F	F	T

Make a truth table for $(r * s) * (p * r)$.

Q.2(a) Construct the truth table of the conditional statement: $r \Rightarrow q$ [2] CO1 L1

Q.2(b) Construct the truth table for the following compound proposition and determine [3] CO1 L3
whether the given statement is a tautology, a contingency or an absurdity:
 $(p \wedge q) \vee (q \wedge \sim p)$

Q.3(a) Name and state any one rule of inference. [2] CO2 L1

Q.3(b) Check the validity of the following argument: [3] CO2 L3
 $(p \Rightarrow q)$
 $\sim p$

Therefore, $\sim q$

Q.4(a) Write negation of the statement: [2] CO1 L3
If I am late then I did not take the train to work

Q.4(b) Prove that n^2 is even if and only if n is even [3] CO2 L4

Q.5(a) According to division algorithm, find the quotient and the remainder when dividend is [2] CO3 L2
-222 and divisor is 5.

Q.5(b) Using Euclidean algorithm, find GCD(190, 24) [3] CO3 L3