

KATHMANDU UNIVERSITY

Dulikhel, Kavre

Internal Examination I - 2025

Subject: MCSC- 201

Group : CE

Time : 60 min

F.M. : 20

Attempt all questions.

1. Define the relative prime number. If a and b are any two positive integer then prove that $\text{GCD}(a, b) \times \text{LCM}(a, b) = ab..$
[1 + 3]
2. Define binary operation and Unary operation. If $*$ is an associative binary operation and y is inverse of x then prove that y is unique.
[2 + 2]
3. Define the characteristic function and prove that:
 $f_{A \cup B} = f_A + f_B - f_A f_B$, symbols have their usual meaning.
[1 + 3]
4. Defined the logic and logically equivalent? Use Mathematical Induction to prove that $\overline{\bigcup_1^n A_i} = \bigcap_1^n \overline{A_i}$
[2 + 2]
5. Defined the transitive relation. Let $A = \{a, b, c\}$ and R be the the relation on A such that $R = \{(a, a), (a, b), (a, c), (b, c), (c, c)\}$.
Prove that R is transitive.
[1+3]

The End

