# Mid-West University
## Examinations Management Office
### Surkhet, Nepal
### End Semester Examination-2080

Level: B.Ed. / III Semester

**Sub: Algebra for Teachers (MATH 433/333)**

Roll No: ........................

**Group 'A'**                              $10 \times 1 = 10$

Tick (✓) the best answers.

1. Let $A = \{1,2,3\}$ and $B = \{1,4,9\}$. The a function $f: A \to B$ is defined by $y = x^2$ is the
   a. Descriptive Form
   b. IPO Form
   c. Graphical Form
   d. Formula Form

2. The multiplicative group $G = \{1, -1\}$ is a cyclic group of order
   a. 0
   b. 1
   c. 2
   d. 3

3. A group $(G, *)$ is said to be abelian iff
   a. $\forall a, b \in G$ implies $a * b = b * a$
   b. $\forall a, b \in G$ implies $a * a = a$
   c. $\forall a, b \in G$ implies $a * b = a * b$
   d. $\forall a, b \in G$ implies $a * b * c = b * a * c$

4. For any non-zero polynomials $f(x)$ and $g(x)$ over a field $F$, there exist unique polynomials $q(x)$ and $r(x)$ such that $f(x) = g(x)q(x) + r(x)$ where $r(x)$ is zero or of degree less than of $g(x)$, is referred to
   a. Division Algorithm
   b. Remainder Theorem
   c. Factor Theorem
   d. Rolle's Theorem

5. An equation $f(x) = 0$ cannot have more positive roots than the number of changes of sign in $f(x)$ and cannot have more negative roots than there are changes of sign in $f(-x)$. The property refers to
   a. Positive Sign Rule
   b. Negative Sign Rule
   c. Descartes' Rule of Sign
   d. None of Above.

6. If $\alpha_1 = \begin{pmatrix} 1 & 2 & 3 \\ 2 & 3 & 1 \end{pmatrix}$ and $\beta_1 = \begin{pmatrix} 1 & 2 & 3 \\ 1 & 3 & 2 \end{pmatrix}$ then which of the followings is a correct product in symmetric group of degree 3?
   a. $\alpha_1\beta_1 = \begin{pmatrix} 1 & 2 & 3 \\ 3 & 2 & 1 \end{pmatrix}$
   b. $\alpha_1\beta_1 = \begin{pmatrix} 1 & 2 & 3 \\ 1 & 2 & 3 \end{pmatrix}$
   c. $\alpha_1\beta_1 = \begin{pmatrix} 1 & 2 & 3 \\ 3 & 1 & 2 \end{pmatrix}$
   d. $\alpha_1\beta_1 = \begin{pmatrix} 1 & 2 & 3 \\ 1 & 3 & 2 \end{pmatrix}$

7. The number which is of the form $\frac{p}{q}$, $p, q \in Z, q \neq 0$ is called
   a. Natural Number
   b. Whole Number
   c. Rational Number
   d. Irrational Number

8. Polynomial of degree 6 is called
   a. Linear
   b. Quadratic
   c. Quintic
   d. Sextic

9. Every equation in which the coefficient of the highest degree term is
   a. 0
   b. 1
   c. 2
   d. 3

10. An algebraic structure consisting of a set $G$ with a binary operation $*$ defined on it is called a semi-group if it holds
    a. Associativity property
    b. Inverse Property
    c. Distributive Property
    d. Commutative Property