Mid-West University

Examinations Management Office

End Semester Exam-2082

B.Ed. Level / III Semester

Sub: Algebra for Teacher (MATH433/333)

Roll No. .....

Group 'A' **10×1=10**

Tick (✓) the Best Answer.

1. Let $A = \{1, 2, 3\}$ and $B = \{2, 9, 28\}$. The a function $f: A \to B$ is defined by...
   a) $y = x$ b) $y = x^2$
   c) $y = x^3$ d) $y = x^3 + 1$

2. The multiplicative group $G = \{1, -1, i, -i\}$ is a cyclic group of order...
   a) 2 b) 3
   c) 4 d) 5

3. A relation R is said to be an equivalent relation, which of the condition may not occur?
   a) Reflexive b) Symmetric
   c) Mixed Additive d) Transitive

4. Which of the following statements satisfies Peano's axiom?
   a) 1 is a natural number.
   b) If n is a natural number, the successor n' of n+1 is a natural number.
   c) 1 is a successor of any natural number.
   d) If two natural numbers have same successor, they are distinct.

5. How much element consists trivial group?
   a) 0 b) 1
   c) 2 d) 3

6. If $\alpha_1 = \begin{pmatrix} 1 & 2 & 3 \\ 1 & 2 & 3 \end{pmatrix}$ and $\beta_2 = \begin{pmatrix} 1 & 2 & 3 \\ 1 & 2 & 3 \end{pmatrix}$ then which of the followings is correct product in symmetric group of degree 3?
   a) $\alpha_1\beta_2 = \begin{pmatrix} 1 & 2 & 3 \\ 2 & 1 & 3 \end{pmatrix}$
   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) $\alpha_1\beta_1 = (1)$

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. A polynomial is quadratic if the value of a_n has the degree
   a) 0 b) 1
   c) 2 d) 3

9. Which of the followings is not the property of equations?
   a) Every equation of degree n has exactly n roots.
   b) In every equation imaginary roots occurs in pairs.
   c) In every equation surd roots occurs in pairs.
   d) An equation does not holds Descartes' Rule of Signs.

10. A permutation of a non-empty set X is...
    a) 1-1 function onto itself. b) 1-1 function.
    c) Onto function. d) None of Above

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Level: B.Ed. / III Semester FM: 60

Time: 3 hrs. PM: 30

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Candidates are requested to give their answers in their own words as far as practicable.

Attempt All the Questions.

Group 'B' **6 × 5 = 30**

1. Explain the nature of Mathematics Algebra with examples.

2. Construct an effective plan of teaching about the concept of relation with daily life problems.

3. Define binary operation, groupoid, semi-group, group and abelian group. Also show that the identity element e of a group G is unique.

   Or

   Define the function and its type with example.

4. Find the sum of squares and cubes of the roots of the equation $x^3 - px^2 + qx - r = 0$.

5. How can you teach the rule of indices for the students in your Mathematics classroom? Explore the ideas with examples.

6. State the general equation of the third degree or cubic equation in x. Also, depending upon the value of $g^2 + 4H^3$, explain four cases.

   Or

   How does a Mathematics teacher solve the problem of student's misunderstandings on the concept of set? Construct a model to solve the problem.

Group 'C' **2 × 10=20**

7. What is Cardan's solution after Hieronimo Cardano? Solve the equation $ax^3 + 3bx^2 + 3cx + d = 0$ by using symmetric function of its root.

8. If every element of a group G is its own inverse, then show that G is an abelian. Also show that the set $S = \{1,3,5,7\}$ is a group under multiplication mod 8.

   Or

   Prove that the set D[x] of all the polynomials in x over an integral domain D, is an integral domain

THE END