MATHEMATICS MOCK TEST

Class: VIII | Set: 10

Time: 2 Hours | Written Marks: 35 | Viva: 5 | Total: 40 Marks

NAME: _____ **ROLL NO:** _____

SECTION A

(1 Mark Each)

1. If $A = \{x : x \text{ is a multiple of } 3, x < 12\}$ and $B = \{x : x \text{ is a multiple of } 4, x < 13\}$, find $n(A \cup B)$.
2. Solve for z: $\frac{3z-5}{2} = 7$.
3. Find the value of $\sqrt[3]{-2744}$.
4. Two exterior angles of a quadrilateral are 150° and 40°. If the other two exterior angles are equal, find the measure of each.
5. A map is drawn to a scale of $1 : 2,000,000$. If the distance between two cities is 4 cm on the map, find the actual distance in km.

SECTION B

(2 Marks Each)

6. Find the smallest number by which 8788 must be divided so that the quotient is a perfect cube.
7. Solve the inequation: $4(x + 2) < 20$ and represent the solution on a number line for $x \in \mathbb{N}$.
8. Find the amount to be paid at the end of 2 years on ₹2400 at 5% per annum compounded annually.
9. In a parallelogram $ABCD$, $\angle A = (2x + 25)^\circ$ and $\angle B = (3x - 5)^\circ$. Find the value of x and the measure of $\angle C$.
10. 12 men can repair a road in 25 days. How many more men should be employed to finish the work in 15 days?

SECTION C

(3 Marks Each)

11. Find the square root of 156.25 using the long division method.
12. If $U = \{1, 2, 3, \ldots, 10\}$, $A = \{2, 3, 4, 8\}$ and $B = \{3, 5, 8\}$, verify that $(A \cup B)' = A' \cap B'$.
13. Tap X can fill a tank in 12 hours and Tap Y can empty the same tank in 15 hours. If both are opened together, how long will it take to fill the tank?

14. Find the compound interest on ₹10,000 for $1\frac{1}{2}$ years at 10% per annum, the interest being compounded half-yearly.

SECTION D

(4 Marks Each - Case Study)

Case Study 1: The Cattle Feed Problem
A cattle farm has provisions for 120 cows to last for 20 days. After 5 days, 30 cows are sold to a neighboring farm.

(i) For how many more days will the remaining provisions last for the remaining cows? (2 Marks)

(ii) If instead of selling, 30 more cows were added after 5 days, how many days would the remaining food have lasted? (2 Marks)

Case Study 2: Geometric Property Investigation
A student is given a quadrilateral $PQRS$ where the diagonals PR and QS intersect at O. It is observed that $OP = OR$ and $OQ = OS$, and the diagonals intersect at 90°.

(i) Identify the specific name of this quadrilateral and list any two other properties it possesses. (2 Marks)

(ii) If $OP = 6$ cm and $OQ = 8$ cm, find the length of the side PQ using the property of the triangle formed at the intersection. (2 Marks)

VIVA VOCE

(5 Marks)

- **Squares:** Find the least number that must be added to 6412 to make it a perfect square.
- **Variation:** If x and y are in inverse variation, what remains constant: the ratio x/y or the product xy?
- **Inequations:** What is the difference between the solution sets of $x < 3$ when $x \in \mathbb{N}$ and $x \in \mathbb{W}$?
- **Quadrilaterals:** Can a trapezium be a parallelogram? Justify your answer.
- **Cubes:** What is the smallest natural number which when multiplied by 250 gives a perfect cube?