MATHEMATICS MOCK TEST

Class: VIII | Set: 13

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

NAME: _____ **ROLL NO:** _____

SECTION A

(1 Mark Each)

1. Rewrite the following statement using set notation: "Set B and Set C are equivalent sets."
2. Solve the linear equation for x: $4x - 9 = 2x + 7$.
3. If the cost of 40 toys is ₹1024, find the cost of one toy.
4. If A can finish a piece of work in 15 days, what is A's 1-day work?
5. Find three natural numbers whose sum and product are equal.

SECTION B

(2 Marks Each)

6. Find the difference between the digits of a two-digit number if the difference between the number and the number obtained by interchanging its digits is 63.
7. Let A be the set of letters in the word "seed". Find $n(A)$ and the total number of subsets of A.
8. If a car covers 56.7 km in 4.5 litres of petrol, how many kilometres will it cover in 26 litres?
9. A is twice as good a workman as B and together they finish a piece of work in 14 days. In how many days can A alone do it?
10. One-third of a number exceeds one-fourth of the number by 15. Find the number.

SECTION C

(3 Marks Each)

11. Replace A, B and C by suitable numerals in the following addition:

$$\begin{array}{cccc} & & A & A \\ + & & B & 6 \\ \hline & C & 2 & 5 \end{array}$$

12. Let $A = \{a, b, c, d, e\}$, $B = \{a, c, e, g\}$, and $C = \{b, e, f, g\}$. Verify that: $A \cap (B \cup C) = (A \cap B) \cup (A \cap C)$.

13. A journey by car takes 48 minutes at 65 km/h. How fast must the car go to finish the journey in 40 minutes?

14. Solve the following linear equation: $\frac{z+5}{6} - \frac{z+1}{9} = \frac{z+3}{4}$.

SECTION D

(4 Marks Each - Case Study)

Case Study 1: Collaborative Work Project
Three workers A, B, and C are assigned a major project. A and B can do the work in 30 days, B and C in 24 days, and C and A in 40 days.

(i) How long will A, B, and C take to complete the work if they all work together? (2 Marks)

(ii) Calculate the time it would take for each worker to finish the work alone. (2 Marks)

Case Study 2: Two-Digit Number Logic
The sum of the digits of a two-digit number is 5. When 27 is added to the number, its digits are reversed.

(i) Let the tens digit be x and the units digit be y. Form a linear equation based on the sum of the digits. (2 Marks)

(ii) Find the original number and verify if the digits reverse when 27 is added. (2 Marks)

VIVA VOCE

(5 Marks)

- **Sets:** Define a "Disjoint Set" and give an example from natural numbers.
- **Variation:** If the speed of a car increases, does the time taken to reach a destination show direct or inverse variation?
- **Playing With Numbers:** If you reverse a 3-digit number $(100a + 10b + c)$ and subtract it from the original, what number is the result always divisible by?
- **Linear Equations:** What is the maximum degree of the variable in a linear equation?
- **Time & Work:** If B is 60% more efficient than A, and A takes 12 days to finish a task, will B take more or fewer days?