MATHEMATICS MOCK TEST

Class: VIII | Set: 14

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

NAME: _____ **ROLL NO:** _____

SECTION A

(1 Mark Each)

1. Find the number of elements in the Power set of $A = \{1, 12\}$.
2. Solve the linear equation for x: $x + 10 = 5x - 20$.
3. On multiplying a number by 7, the product consists only of the digit 3. Find the smallest such product.
4. If 45 iron rods of the same size weigh 12.6 kg, what is the weight of one such rod?
5. If Worker A takes 12 days to finish a job and Worker B is 60% more efficient than A, who will take more time?

SECTION B

(2 Marks Each)

6. In a two-digit number, the units digit is 3 and seven times the sum of the digits is the number itself. Find the number.
7. Let $\xi = \{b, c, d, e, f, g\}$, $A = \{b, c, d, e\}$ and $B = \{d, e, f, g\}$. Verify that $(A \cup B)' = A' \cap B'$.
8. In a zoo, 28 parrots consume 7420 g of nuts in a day. If 8 parrots are sent to another zoo, what quantity of nuts will be required in a day for the remaining parrots?
9. A can do $1/4$ of a work in 5 days, while B can do $1/5$ of the work in 6 days. In how many days can both do it together?
10. Three numbers are in the ratio $4 : 5 : 6$ and their sum is 135. Find the numbers.

SECTION C

(3 Marks Each)

11. Find the values of A and B in the following subtraction:

$$\begin{array}{rcc} & 6 & A \\ - & A & B \\ \hline & 3 & 7 \end{array}$$

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

13. Seven workers working 6 hours a day can build a wall in 12 days. How many days will 3 workers take to build a similar wall, working 8 hours a day?

14. The sum of two numbers is 110. One-fifth of the larger number is 8 more than one-ninth of the smaller number. Find the numbers.

SECTION D

(4 Marks Each - Case Study)

Case Study 1: The Remuneration Distribution
In a factory, the manager uses a standard formula to calculate group wages. It is known that 5 men or 7 women can earn ₹700 per day.

(i) How much does one man and one woman earn individually per day? (2 Marks)

(ii) Calculate the total daily earnings for a group consisting of 7 men and 11 women. (2 Marks)

Case Study 2: Digit Logic and Reversal
A puzzle in a math textbook states: The sum of the digits of a two-digit number is 9. If 9 is added to the number formed by reversing the digits, then the result is thrice the original number.

(i) Let the tens digit be x and units digit be y. Form two linear equations based on the sum of digits and the reversal condition. (2 Marks)

(ii) Solve the equations to find the original number. (2 Marks)

VIVA VOCE

(5 Marks)

- **Linear Equations:** What is the difference between a variable and a constant?
- **Sets:** Define a ”Power Set” and state how many elements it contains for a set with n elements.
- **Numbers:** If you multiply a number by 7 and the product is all 3s, what digit logic will you use to find the smallest such number?
- **Variation:** Explain with an example why the number of workers and the time taken to build a wall is an inverse variation.
- **Work:** If person A does $1/n$ work in a day, how many days will they take to finish the job?