MATHEMATICS MOCK TEST

Class: VIII | Set: 15

Time: 1 Hour 30 Minutes | Written Marks: 35 | Viva: 5 | Total: 40 Marks

NAME: _____ **ROLL NO:** _____

SECTION A

(1 Mark Each)

1. If x and y vary directly and x = 5 when y = 20, find the constant of variation k (where $y = kx$).
2. State the number of faces in a triangular prism.
3. Write the formula for the area of a general quadrilateral with diagonal d and offsets h_1 and h_2.
4. If a tap fills a tank in 8 hours, what part of the tank is filled in 3 hours?
5. Find the volume of a cuboid with length 10 cm, breadth 5 cm, and height 4 cm.

SECTION B

(2 Marks Each)

6. If the cost of 12 pens is ₹180, what will be the cost of 8 pens?
7. 10 men can build a wall in 6 days. How many men are required to build the same wall in 4 days?
8. The area of a trapezium is 48 cm^2 and its height is 6 cm. If one of the parallel sides is 10 cm, find the length of the other parallel side.
9. Find the total surface area of a cube whose side is 5 cm.
10. Verify Euler's formula for a cube (Faces = 6, Vertices = 8, Edges = 12).

SECTION C

(3 Marks Each)

11. A can do a piece of work in 12 days and B can do it in 15 days. They work together for 4 days and then A leaves. In how many more days will B finish the remaining work?
12. A car travels 150 km in 3 hours. How far will it travel in 5 hours at the same speed? Also, find the time taken to cover 250 km.
13. Find the area of a rhombus whose side is 6 cm and altitude is 4 cm. If one of its diagonals is 8 cm long, find the length of the other diagonal.

14. A cylindrical tank has a base radius of 7 m and height of 10 m. Find its lateral surface area and volume. (Take $\pi = \frac{22}{7}$)

SECTION D

(4 Marks Each - Case Study)

Case Study 1: The Building Renovation
A contractor calculates that 12 workers can paint a large hall in 10 days.

(i) If the owner wants the work to be finished in 8 days, how many extra workers must the contractor hire? (2 Marks)

(ii) If 4 workers left the job after 2 days of working, how many total days will it take for the remaining workers to finish the whole job? (2 Marks)

Case Study 2: Water Storage and Supply
A housing society uses a large cuboidal underground tank of dimensions 5 m $\times$ 4 m $\times$ 3 m.

(i) Find the total surface area of the tank (including the top cover). (2 Marks)

(ii) If the tank is currently filled to $2/3$ of its capacity, find the volume of water in litres. (1 m$^3 = 1000$ litres). (2 Marks)

VIVA VOCE

(5 Marks)

- **Proportion:** Give an example where two quantities are in direct proportion but not in direct variation.
- **Time & Work:** If Person A is 3 times as efficient as Person B, what is the ratio of time taken by them to complete the same task?
- **Euler's Formula:** What are the variables F, V, and E?
- **Mensuration:** How do you find the area of a polygon by splitting it into triangles and trapeziums?
- **3D Solids:** How many faces and vertices does a cylinder have?