MATHEMATICS MOCK TEST

Class: VIII | Set: 14

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

NAME: _____ **ROLL NO:** _____

SECTION A

(1 Mark Each)

1. A map is given with a scale of 2 cm $= 1000$ km. If two cities are 2.5 cm apart on the map, find the actual distance.
2. Find the number of vertices in a polyhedron having 8 faces and 12 edges.
3. Find the area of a rhombus if its diagonals are 12 cm and 16 cm.
4. If 4 men can do a job in 8 days, how many days will 1 man take to do the same job?
5. Find the volume of a cube whose edge is 1.2 cm.

SECTION B

(2 Marks Each)

6. 6 pipes can fill a tank in 1 hour 24 minutes. How long will it take to fill the tank if only 7 pipes of the same type are used?
7. P can do $1/4$ of a work in 5 days. How many days will P take to finish the whole work?
8. The area of a trapezium is 105 cm^2. If its parallel sides are 12 cm and 18 cm, find the distance between them.
9. Find the total surface area of a cylinder whose base radius is 7 cm and height is 14 cm.
10. Verify Euler's formula for a triangular prism ($F = 5, V = 6, E = 9$).

SECTION C

(3 Marks Each)

11. A contractor estimates that 3 persons could rewire a house in 4 days. If he uses 4 persons instead of 3, how long should they take to complete the job?
12. A and B can do a piece of work in 12 days. B and C can do it in 15 days, while C and A can do it in 20 days. In how many days will $A, B,$ and C finish it together?
13. Find the area of a rhombus whose side is 6.5 cm and whose altitude is 4 cm. If one of its diagonals is 13 cm long, find the length of the other diagonal.
14. A cylindrical road roller is 1 m long and has a base diameter of 84 cm. Find the area it covers in 500 complete revolutions. (Take $\pi = 22/7$)

SECTION D

(4 Marks Each - Case Study)

Case Study 1: The Housing Project
In a housing society, a group of workers is hired to paint the boundary walls. It is estimated that 15 workers can finish the task in 12 days.

(i) If 3 workers do not turn up for the work, how many days will the remaining workers take to finish the job? (2 Marks)

(ii) If the task must be completed in only 9 days, how many more workers should be hired? (2 Marks)

Case Study 2: Water Conservation System
A school installs a cylindrical rain-water harvesting tank. The radius of the tank is 3.5 m and its depth is 4 m.

(i) Find the volume of the tank in cubic metres. (2 Marks)

(ii) If the tank is currently filled with water up to a height of 2 m, calculate the volume of water in litres. (1 m$^3 = 1000$ litres). (2 Marks)

VIVA VOCE

(5 Marks)

- **Proportion:** When two quantities x and y are in inverse proportion, does the ratio x/y remain constant? Explain.
- **Work:** If person A is three times faster than person B, what is the ratio of their one-day work?
- **Euler's Formula:** Can a polyhedron have 10 faces, 20 edges, and 15 vertices? Justify.
- **Mensuration:** How many square centimetres (cm^2) are there in one square metre (m^2)?
- **Solids:** What is a "Regular Polyhedron"?