RISE OF NATION ACADEMY

Mathematics

Min. Marks:- 20 **MOCK TEST** **Max. Marks:- 40**
Time:- 2hr

General Instructions :

1. *The question paper consists of 14 questions divided into 3 sections A, B, C.*
2. *Section A comprises of 6 questions of 2 marks each. Internal choice has been provided in two questions.*
3. *Section B comprises of 4 questions of 3 marks each. Internal choice has been provided in one question.*
4. *Section C comprises of 4 questions of 4 marks each. An internal choice has been provided in one question. It contains two case study based questions.*

SECTION-A

1. The sum of the 5^{th} and the 9^{th} terms of an A.P. is 30. If its 25^{th} term is three times its 8^{th} term, then find the A.P.

2. Find the mean of the following data:

Class	1-3	3-5	5-7	7-9
Frequency	12	22	27	19

3. If two cubes, each of edge 4 cm are joined end to end, then find the surface area of the resulting cuboid.

OR

A vessel is in the form of a hollow hemisphere mounted by a hollow cylinder. The diameter of the hemisphere is 42 cm and the total height of the vessel is 30 cm. Find the inner surface area of the vessel.

4. What is the distance between two parallel tangents to a circle of the radius 4 cm?

5. Find the value of f from the following data, if its mode is 65, where frequency 6, 8, f and 12 are in ascending order.

Class-interval	0-20	20-40	40-60	60-80	80-100	100-120
Frequency	6	8	f	12	6	5

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6. For what value of k, are the roots of the quadratic equation, $kx\,(x-2)+6=0$ equal?

7. A girl is twice as old as her sister. Four years hence, the product of their ages (in years) will be 160. Find their present ages.

8. The sum of four consecutive numbers in an A.P. is 32 and the ratio of the product of the first and the last term to the product of two middle terms is 7 : 15. Find the numbers.

OR

The sum of the first three terms of an A.P. is 48. If the product of the first and second terms exceeds four times the third term by 12, find the A.P.

9. Draw a line segment $AB = 6.5$ cm and divide it internally in the ratio 3 : 5.

10. On a straight line passing through the foot of a tower, two points C and D are at distances of 4 m and 16 m from the foot respectively. If the angles of elevation from C and D of the top of the tower are complementary, then find the height of the tower.

SECTION - C

11. The angle of elevation of the top of a hill at the foot of a tower is 60° and the angle of depression from the top of the tower at the foot of the hill is 30°. If the tower is 50 m high, find the height of the hill.

OR

Two points A and B are on the same side of a tower and in the same straight line with its base. The angles of depression of these points from the top of the tower are 60° and 45° respectively. If the height of the tower is 15 m, then find the distance between these points. [Use $\sqrt{3} = 1.732$]

12. Raman made a model shaped like a cylinder with two cones attached at its two ends by using a thin aluminium sheet. The diameter of the model is 21 cm and its length is 36 cm. If each cone has a height of 9 cm, find the volume of air contained in the model that Raman made.

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13. An electric scooter manufacturing company wants to declare the mileage of their electric scooters. For this, they recorded the mileage (km/charge) of 50 scooters of the same model. Details of which are given in the following table.

Mileage (km/charge)	100-120	120-140	140-160	160-180
Number of scooters	7	12	18	13

Based on the above information, answer the following questions.

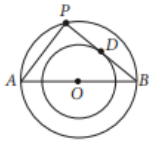
(i) Find the average mileage.

(ii) Find the modal value of the given data.

(ii) Two concentric circles are such that the difference between their radii is 4 cm and the length of the chord of the larger circle which touches the smaller circle is 24 cm. Then find the radius of the smaller circle.

14. If a tangent is drawn to a circle from an external point, then the radius at the point of contact is perpendicular to the tangent.

(i) The diameter of two concentric circles are 10 cm and 8 cm. AB is the diameter of the bigger circle and BD is the tangent to the smaller circle touching it at D and intersecting the larger circle at P on producing. Find the length of AP.



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