

RISE OF NATION ACADEMY

Subject:- Mathematics (SET-F)
MOCK TEST

Min. Marks:- 20

Time:- 2
Max. Marks:- 40

General Instructions :

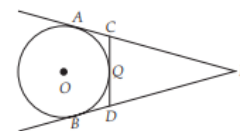
1. The question paper consists of 14 questions divided into 3 sections A, B, C.
2. Section A comprises of 6 questions of 2 marks each. Internal choice has been provided in two questions.
3. Section B comprises of 4 questions of 3 marks each. Internal choice has been provided in one question.
4. Section 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. Solve the following quadratic equation for x :

$$4x^2 - 4a^2x + (a^4 - b^4) = 0$$

2. How many two-digit numbers are divisible by 3?
3. If O is the centre of a circle, PQ is a chord and the tangent PR at P makes an angle of 50° with PQ , then find $\angle POQ$.



OR

In the given figure, PA and PB are tangents to the circle from an external point P . CD is another tangent touching the circle at Q . If $PA = 12$ cm, $QC = QD = 3$ cm, then find $PC + PD$.

4. Data of 'missed catches' for the 40 matches played by a player is as follows :

Number of missed catches in a match	0-3	3-6	6-9	9-12	12-15
Number of matches	15	16	3	4	2

Calculate the mean number of catches missed by him.

5. A toy is in the form of a cone mounted on a hemisphere. The diameter of the base of the cone and that of hemisphere is 6 cm and the height of cone is 4 cm. Calculate the surface area of the toy. [Take $\pi = 3.14$]
(OR) A toy is in the shape of a cone mounted on a hemisphere of same base radius. If the volume of the toy is 231 cm^3 and its diameter is 7 cm, then find the height of the toy. $\left[\text{Use } \pi = \frac{22}{7} \right]$
6. The mean of a set of numbers is \bar{x} . If each number is multiplied by k , then find the mean of the new set.

SECTION - B

7. Find that non-zero value of k , for which the quadratic equation $kx^2 + 1 - 2(k - 1)x + x^2 = 0$ has equal roots. Hence, find the roots of the equation.
8. If the sum of first 7 terms of an A.P. is 49 and that of its first 17 terms is 289, find the sum of first n terms of the A.P.
9. A 7 m long flagstaff is fixed on the top of a tower standing on the horizontal plane. From a point on the ground, the angles of elevation of the top and bottom of the flagstaff are 60° and 45° respectively. Find the height of the tower correct to one place of decimal. (Use $\sqrt{3} = 1.73$)

Address: - In front of Nagar Palika Nigam, Near BOI, Agar Road Ujjain.

Contact:- +919826448204,+919981108636, Email:- riseofnation.123@gmail.com

RISE OF NATION ACADEMY

Subject:- Mathematics (SET-F)
MOCK TEST

Min. Marks:- 20

Time:- 2
Max. Marks:- 40

10. Draw a circle of radius 2.4 cm. Take a point P on it. Without using the centre of the circle, draw a tangent to the circle at point P .

SECTION - C

11. As observed from the top of a 100 m high light house from the sea-level, the angles of depression of two ships are 30° and 45° . If one ship is exactly behind the other on the same side of the light house, find the distance between the two ships. [Use $\sqrt{3} = 1.732$]
12. The mode of the following data is 36. Find the missing frequency x in it.

Class	0-10	10-20	20-30	30-40	40-50	50-60	60-70
Frequency	8	10	x	16	12	6	7

OR

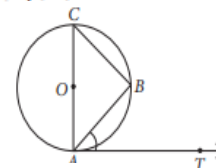
If the median of the following frequency distribution is 32.5, then find the values of f_1 and f_2 .

Class	0-10	10-20	20-30	30-40	40-50	50-60	60-70	Total
Frequency	f_1	5	9	12	f_2	3	2	40

13. For class 10 students, a teacher planned a game for the revision of chapter circles with some questions written on the board, which are to be answered by the students. For each correct answer, a student will get a reward. Some of the questions are given below.

Answer these questions to check your knowledge.

- (i) If PA and PB are two tangents drawn to a circle with centre O from P such that $\angle PBA = 50^\circ$, then find the measure of $\angle OAB$.
- (ii) In the adjoining figure, AB is a chord of the circle and AOC is its diameter such that $\angle ACB = 55^\circ$, then find the measure of $\angle BAT$.



14. Isha's father brought an ice-cream brick, empty cones and scoop to pour the ice-cream into cones for all the family members. Dimensions of the ice-cream brick were $(30 \times 25 \times 10)$ cm³ and radius of hemi-spherical scoop was 3.5 cm. Also, the radius and height of cone were 3.5 cm and 15 cm respectively.



Based on the above information, answer the following questions.

- (i) Find the quantity of ice-cream in the brick (in litres).
- (ii) Find the minimum number of scoops required to fill one cone upto brim.

Address: - In front of Nagar Palika Nigam, Near BOI, Agar Road Ujjain.

Contact:- +919826448204,+919981108636, Email:- riseofnation.123@gmail.com