

INDIAN SCHOOL SOHAR
PRE – BOARD EXAMINATION, 2015-16
MATHEMATICS

Date: 11 - 02 - 2016
Class: X

Time: 3 hrs
Max. Marks: 90

General Instructions:

- All questions are compulsory.
- Section A comprises 4 questions of 1 mark each.
- Section B comprises 6 questions of 2 marks each.
- Section C comprises 10 questions of 3 marks each.
- Section D comprises 11 questions of 4 marks each.

SECTION A

1. If $p - 1$, $p + 3$, $3p - 1$ are in A.P, then find “p”.
2. If tangents PA and PB from a point P to a circle with centre O are inclined to each other at an angle of 70° , then find $\angle POA$.
3. If the angle of elevation of a building from a distance of 100m from its foot is 60° , then find the height of the building.
4. Two cubes each of volume 8cm^3 are joined end to end ,then find the surface area of the resulting cuboid.

SECTION B

5. What point on the X-axis is equidistant from (7, 6) and (-3,4).
6. In a leap year, find the probability that there are 53 Tuesdays in the year.
7. Which term of the A.P., 32, 29, 26.....is first negative term?
8. Prove that the tangents drawn at the end-points of a diameter of a circle are parallel.
9. Find the value of “x”, if the points (x, 8), (-4, 2) and (5, -1) are collinear.
10. Find the middle term(s) of the A.P. -11,-7,-3....., 49.

SECTION C

11. Find the roots of the quadratic equation: $a(a^2 + b^2)x^2 + b^2x - a = 0$
12. A card is drawn at random from a well-shuffled pack of 52 playing cards. Find the probability that the card drawn is neither a black card nor a king.
13. The diameter of sphere is 42cm.It is melted and drawn into a cylindrical wire of 28cm diameter. Find the length of the wire.
14. Diameter of a wheel is 70cm.Howmany revolutions will it make to cover 165 meters.
15. Draw a ΔABC with side $BC = 6\text{cm}$, $AB = 5\text{cm}$ and $\angle ABC = 60^\circ$.Then construct a triangle whose sides are $\frac{3}{4}$ of the corresponding sides of ΔABC .
16. An observer 1.5m tall is 28.5m away from the chimney. The angle of elevation of the top of the chimney from her eyes is 45° .Find the height of the chimney.
17. If all the sides of a parallelogram touch a circle, then show that the parallelogram is a rhombus.

18. Find the ratio in which the line $3x + y = 9$ divides the line segment joining the points (1,3) and (2,7)
19. Find the sum of the first 31 terms of an AP whose n^{th} term is given by $3 + \frac{2n}{3}$
20. Cards marked from 5 to 100 are placed in a box and mixed thoroughly. A card drawn from the box at random. Find the probability that the number on the card taken out is
(a) a multiple of 5 or 6 (b) a multiple of 5 and 6.

SECTION D

21. Solve by the method of completing the squares: $5x^2 - 2x - 2 = 0$
22. A toy is in the form of a cone mounted on a hemisphere of radius 3.5 cm. If the total height of the toy is 15.5cm, find its total surface area.
23. The minute hand of a clock is 10cm long. Find the area on the face of the clock described by the minute hand between 9 am and 9.35 am.
24. If P (2,1), Q(3,2) and R(4,6) are the mid points of sides of AB, BC and CA respectively in the triangle ABC, find the coordinates of points A, B and C.
25. The angle of elevation of a jet plane from a point P on the ground is 60° . After a flight of 15 seconds, the angle of elevation changes to 30° . If the jet plane is flying at a constant height of $1500\sqrt{3}$ m, find the speed of the jet plane.
26. Draw a pair of tangents to a circle of radius 5.5cm, which are inclined to each other at an angle of 60° .
27. From a point P, two tangents PA and PB are drawn to a circle C (O, r). If $OP = 2r$, Show that $\triangle APB$ is equilateral.
28. The rate at which the monthly salary of a person increases annually is an A.P. If he was drawing Rs 4500 p.m. in his 11th year of service and Rs 6900 p.m. in his 27th Year of service, find his salary at the start and the annual increment.
29. Two years ago a man's age was three times the square of his son's age. Three years hence his age will be four times his son's age. Find their present ages.
30. A metallic right circular cone 20cm high and whose semi-vertical angle is 30° , is cut into two parts at the middle of its height by a plane parallel to its base. If the frustum so obtained be drawn into a wire of diameter $\frac{1}{3}$ cm, find the length of the wire.
31. In an equilateral triangle of side 24cm, a circle is inscribed touching its side. Find the area of the remaining portion of the triangle. ($\sqrt{3} = 1.732$)

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