



THE H.B.KAPADIA NEW HIGH SCHOOL

ENGLISH MEDIUM

SA-1, October-2016



An ISO 9001 : 2008
Certified Institution

Standard	: X	Marks	: 90
Subject	: Maths	Duration	: 3 hours

- Write in neat and legible handwriting.
- All the questions are compulsory. Internal options are given.
- The question paper comprises of **31** questions divided into four sections A, B, C and D. You are to attempt all the four sections.
- Questions **1** to **4** in Section A are **one** mark questions.
- Questions **5** to **10** in Section B are **two** marks questions.
- Questions **11** to **20** in Section C are **three** marks questions.
- Questions **21** to **31** in Section D are **four** marks questions.
- Figures to the right indicate full marks.
- There is no overall choice in the question paper.
- Use of calculator is not permitted.

Section - A

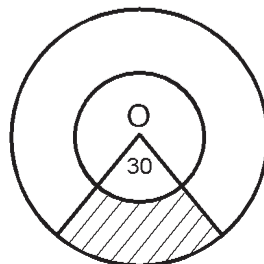
[04]

1. In the tangents PA and PB from a point P to the circle with centre O are inclined to each other at an angle of 110° then find $\angle POA$.
2. A pole 10 m high cast a shadow 10 m long on the ground, then calculate the angle of elevation of the sun.
3. Find the perpendicular distance of the point A (4,2) from the x-axis.
4. Find the co-ordinate of the point, where the perpendicular bisector of the line segment joining the points P(1,5) and Q(4,6) cuts the Y-axis.

Section - B

[12]

5. Find the value of k, such that the quadratic equation has equal roots.
 $(k-12)x^2 - 2(k-12)x + 2 = 0$.
6. Flowers are to be planted in the shaded portion which is shown by sectors of two concentric circles of radii 7 m and 3.5 m. Find the area of shaded region.



7. The angles of a triangle are in A.P. The greatest angle is twice the least. Find all the angles of a triangle.
8. The probability of guessing the correct answer to certain test question is $\frac{y}{12}$. If the probability of not guessing correct answer is $\frac{3}{4}$ then find the value of y.
9. If (1,2), (4,b), (a,6), and (3,5) are the vertices of a parallelogram taken in order, then find the value of a and b.

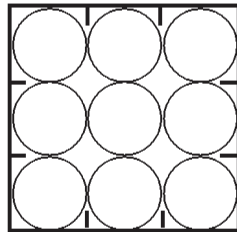
OR

- Check whether (5,-2), (6,4) and (7,-2) are the vertices of an isosceles triangle.
10. A bag contains 14 balls of which P are white. If 6 more white balls are added to the bag, the probability of drawing white ball is $\frac{1}{2}$ then find the value of P.

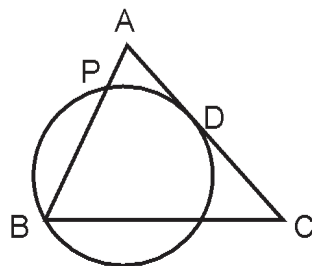
Section - C

[12]

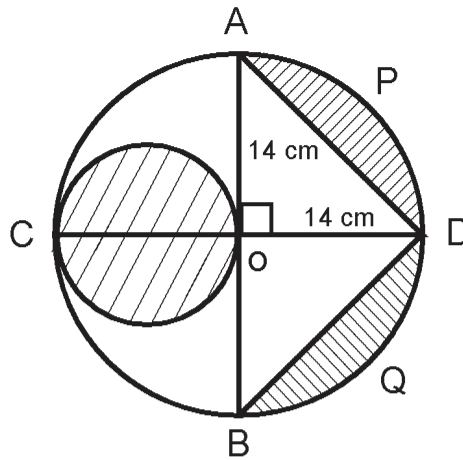
11. The sum of the number and its positive square root is $\frac{6}{25}$. Find the number.
12. On a square Handkerchief, 9 circular designs each of radius 7 cm are made. Find the area of the remaining portion of Handkerchief.



13. If m times the m^{th} term of an A.P. is equal to n times its n^{th} term, then show that $(m+n)^{\text{th}}$ term of an A.P. is zero
14. In the given figure in $\triangle ABC$ $AB = AC$, A circle through B touches AC at D and intersects AB at P. If D is the midpoint of \overline{AC} then prove that $AB = 4AP$.



OR



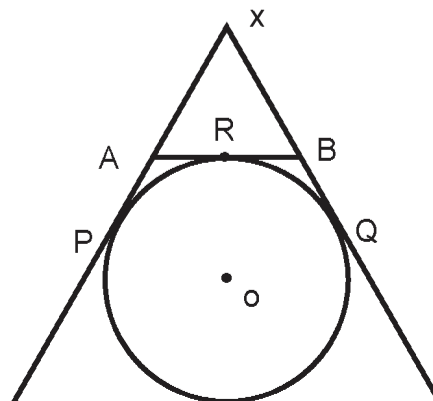
In the figure, O is centre of a circle with radius 14 cm. AOB and COD are two perpendicular diameters of circle. Find the area of shaded region.

15. A die is thrown once, find the probability of getting -
 - (a) A prime number
 - (b) A number divisible by 2
 - (c) A multiple of 3
16. The height of a tower is 45 m. If the angle of elevation of sun is 30° , then find the length of the shadow formed at that time ($\sqrt{3} = 1.73$).
17. Find the points on the X-axis which are at a distance of $2\sqrt{5}$ from the point (7,-4). How many such points are there

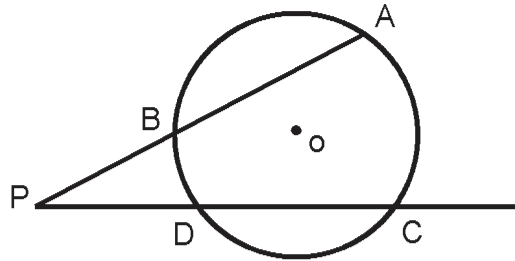
OR

If the points P(4,3) and Q(x,5) are on the circle with centre O(2,3) then, find the value of x.

18. If p^{th} , q^{th} and r^{th} terms of an A.P. are a,b and c respectively, then prove that $p(b-c) + q(c-a) + r(a-b) = 0$.
19. In the given figure XP and XQ are tangents to a circle with centre O, from a point X outside the circle. ARB is a tangent to circle at R. Prove that $XA + AR = XB + BR$.

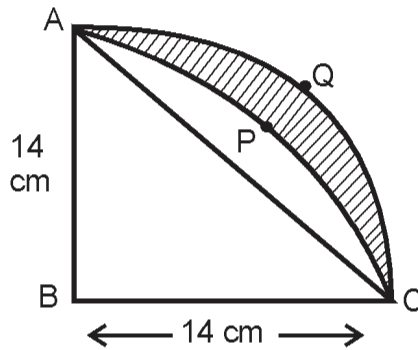


OR



In the given figure, O is the centre of circle. If PA = 12 cm PC = 15 cm and CD = 7 cm then find the length of AB.

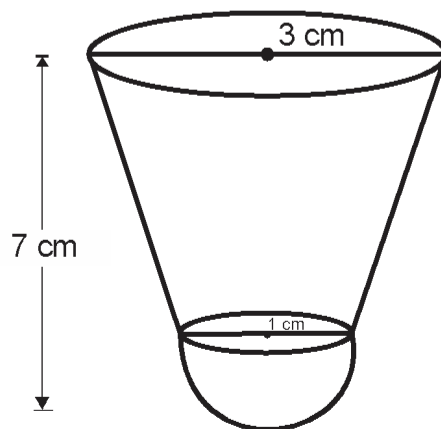
20. In the given figure ABC is a quadrant of a circle of radius 14 cm and a semi circle is drawn with AC as a diameter. Find the area of shaded region.



Section - D

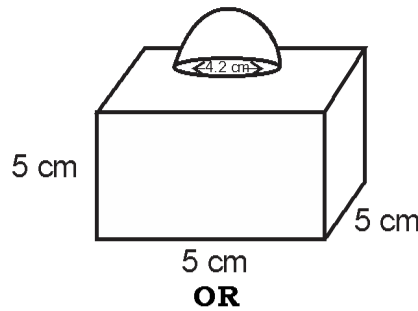
[44]

21. A motorboat whose speed is 15 km/h in a still water goes 30 km downstream and comes back in total time of 4 hr 30 min. Find the speed by stream.
22. A shuttle cock used for playing bandminton has the shape of a frustum of a cone mounted on a hemisphere. The external diameters of frustum are 6 cm and 2 cm and the height of the entire shuttle cock is 7 cm find the external surface area.



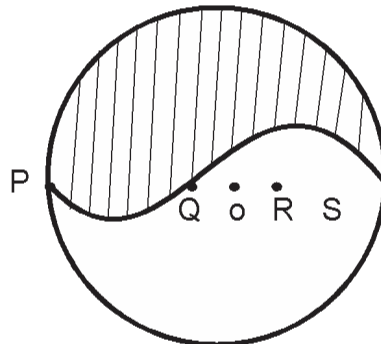
23. If the ratio of sum of m terms of an A.P. to sum of n terms of the same A.P. is $\frac{m^2}{n^2}$ then prove that the ratio of its m^{th} and n^{th} terms is $2m-1 : 2n-1$.

24. A decorative block as in figure is made of a cube and a hemisphere. The base of clock is cube having edge of 5 cm and hemisphere attached on the top has a diameter of 4.2 cm. If the block is to be painted then find the total area to be painted.



A copper rod of diameter 1 cm and length 8 cm is drawn into a wire of length 18m of uniform thickness. Find the thickness of the wire.

25. Two tangents PA and PB are drawn to a circle with centre O from an external point P. Prove that $\angle APB = 2\angle OAB$.
26. Prove that the intercept of a tangent between two parallel tangents to a circle subtends a right angle at the centre of the circle.
27. PQRS is a diameter of a circle of radius 6 cm. The length PQ , QR and RS are equal. Semi circles are drawn on PQ and QS as diameters shown in figure. Find the area of shaded region.



28. Draw a pair of tangents to a circle of radius 5 cm. Which are inclined to each other at an angle of 60° .
29. 200 logs are stacked such that 20 logs are in the bottom row, 19 in the next row, 18 in the row next to it so on,
- (a) In how many rows are the 200 logs placed and how many logs are in the top row?
- (b) Which value are depicted in the pattern of logs ?
30. The angle of depression of the top and bottom of 8 m tall building from the top of a multistored building are 30° and 45° respectively. Find the height to the multistoreid bulding and the distance between athe two buildings. ($\sqrt{3} = 1.73$)

OR

The distance between two vertical poles is 60 m . The height of the one pole is double the height of the other. The angle of elevation of the top of the poles from the middle point of the line segment joining their feet are complementary of each other. Find the height of the poles.

31. Show that the points (12,8) , (-2,6) and (6,0) are the vertices of right angled triangle. Also, show that the midpoint ofthe hypotenuse is equidistance from the angular points.

Best of Luck