

KENDRIYA VIDYALAYA SANGATHAN, HYDERABAD REGION
MOCK TEST PAPER 09 FOR SA - II (2016-17)

SUBJECT: MATHEMATICS

BLUE PRINT : SA-II CLASS X

Unit/Topic	MCQ (1 mark)	Short answer (2 marks)	Short answer (3 marks)	Long answer (4 marks)	Total
Algebra Quadratic Equations & Arithmetic Progression	1(1)	4(2)	6(2)	12(3)	23(8)
Geometry Circles & Construction	1(1)	4(2)	--	12(3)	17(6)
Trigonometry Heights & Distances	1(1)	--	3(1)	4(1)	08(3)
Probability	1(1)	--	3(1)	4(1)	08(3)
Coordinate Geometry	--	4(2)	3(1)	4(1)	11(4)
Mensuration Areas related to Circles & Surface Areas and Volumes	--	--	15(5)	8(2)	23(7)
Total	4(4)	12(6)	30(10)	44(11)	90(31)

MARKING SCHEME FOR SA – II

SECTION	MARKS	NO. OF QUESTIONS	TOTAL
VSA	1	4	04
SA – I	2	6	12
SA – II	3	10	30
LA	4	11	44
GRAND TOTAL			90

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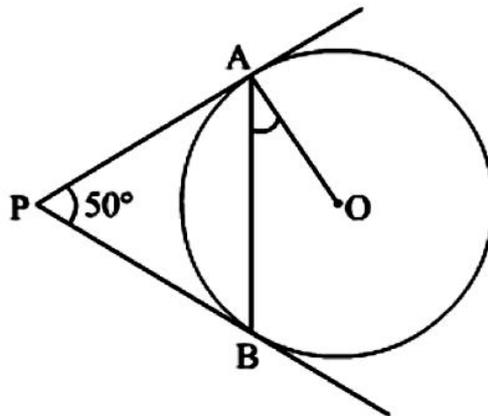
MAX. MARKS : 90
DURATION : 3 HRS

General Instructions:

1. All questions are compulsory.
 2. Question paper is divided into four sections: Section A consists 4 questions each carry 1 marks, Sections B consists 6 questions each carry 2 marks, Sections C consists 10 questions each carry 3 marks and Sections D consists 11 questions each carry 4 marks.
 3. There is no overall choice.
 4. Use of Calculator is prohibited.
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SECTION – A

1. In the below figure, PA and PB are tangents to the circle with centre O such that $\angle APB = 50^\circ$. Write the measure of $\angle OAB$.



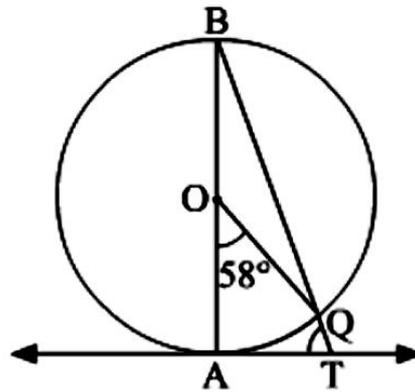
2. The tops of two towers of height x and y , standing on level ground, subtend angles of 30° and 60° respectively at the centre of the line joining their feet, then find x, y .
3. A letter of English alphabet is chosen at random. Determine the probability that the chosen letter is consonant.
4. If $x = -\frac{1}{2}$ is a solution of the quadratic equation $3x^2 + 2kx - 3 = 0$, find the value of k .

SECTION – B

5. Solve the following quadratic equation for x : $4x^2 - 4a^2x + (a^4 - b^4) = 0$
6. If $A(5, 2)$, $B(2, -2)$ and $C(-2, t)$ are the vertices of a right angled triangle with $\angle B = 90^\circ$, then find the value of t .
7. Find the ratio in which the point $P\left(\frac{3}{4}, \frac{5}{12}\right)$ divides the line segment joining the points $A\left(\frac{1}{2}, \frac{3}{2}\right)$ and $B(2, -5)$.
8. From a point T outside a circle of centre O , tangents TP and TQ are drawn to the circle. Prove that OT is the right bisector of line segment PQ .

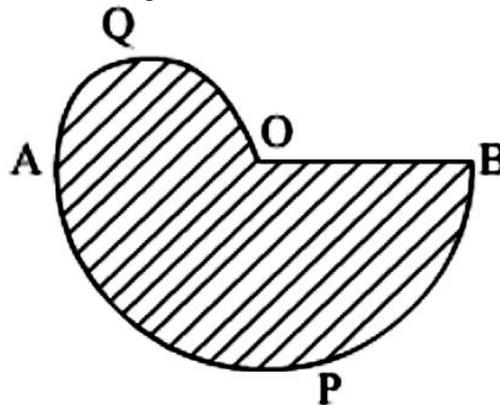
9. Find the middle term of the A.P. 6, 13, 20, ... , 216.

10. In the below figure, AB is the diameter of a circle with centre O and AT is a tangent. If $\angle AOQ = 58^\circ$, find $\angle ATQ$.

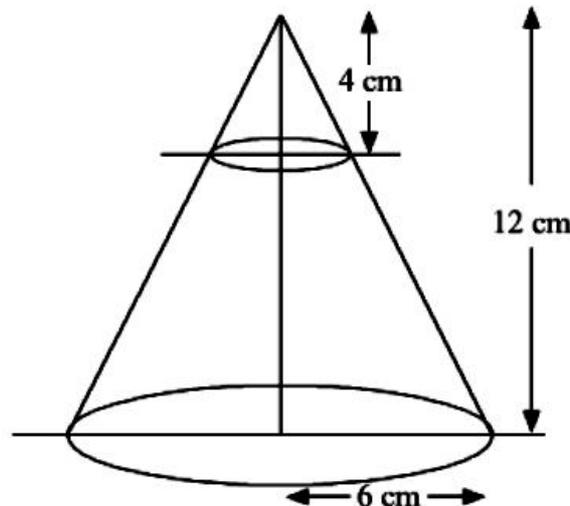


SECTION – C

11. In the below figure, APB and AQO are semicircles, and $AO = OB$. If the perimeter of the figure is 40 cm, find the area of the shaded region.

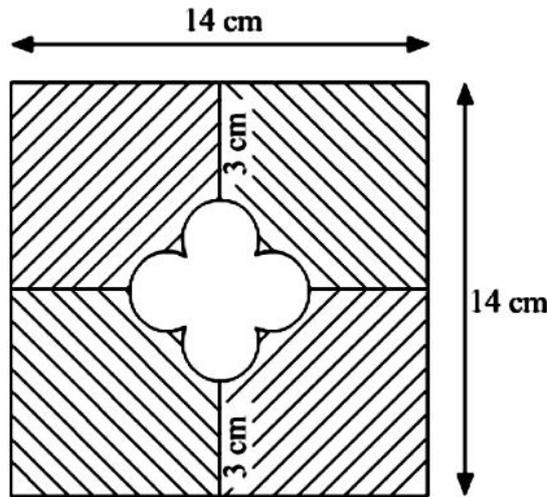


12. In the below figure, from the top of a solid cone of height 12 cm and base radius 6 cm, a cone of height 4 cm is removed by a plane parallel to the base. Find the total surface area of the remaining solid.

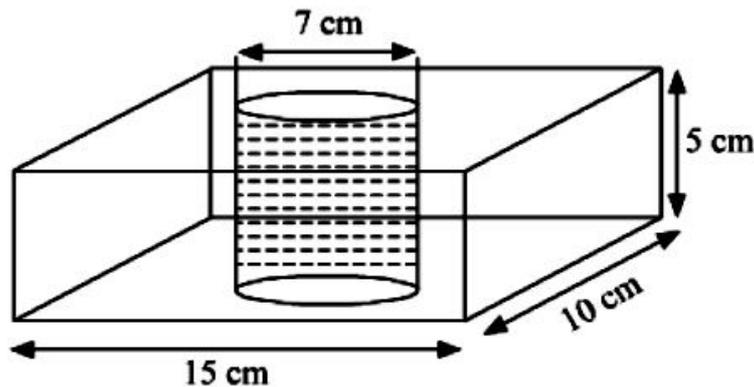


13. A solid wooden toy is in the form of a hemisphere surrounded by a cone of same radius. The radius of hemisphere is 3.5 cm and the total wood used in the making of toy is $166\frac{5}{6}$ cm³. Find the height of the toy. Also, find the cost of painting the hemispherical part of the toy at the rate of Rs 10 per cm².

14. In the below figure, find the area of the shaded region [Use $\pi = 3.14$]



15. Find the area of the triangle ABC with A(1, -4) and mid-points of sides through A being (2, -1) and (0, -1).
16. 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.
17. The angle of elevation of the top of a building from the foot of the tower is 30° and the angle of elevation of the top of the tower from the foot of the building is 45° . If the tower is 30 m high, find the height of the building.
18. Two different dice are rolled together. Find the probability of getting : (i) the sum of numbers on two dice to be 5. (ii) even numbers on both dice.
19. If S_n denotes the sum of first n terms of an A.P., prove that $S_{12} = 3(S_8 - S_4)$.
20. In the below figure, from a cuboidal solid metallic block, of dimensions 15cm x 10cm x 5cm, a cylindrical hole of diameter 7 cm is drilled out. Find the surface area of the remaining block



SECTION – D

21. Construct a triangle ABC with $BC = 7$ cm, $\angle B = 60^\circ$ and $AB = 6$ cm. Construct another triangle whose sides are times the corresponding sides of $\triangle ABC$.
22. From a point P on the ground the angle of elevation of the top of a tower is 30° and that of the top of a flag staff fixed on the top of the tower, is 60° . If the length of the flag staff is 5 m, find the height of the tower.

23. A box contains 20 cards numbered from 1 to 20. A card is drawn at random from the box. Find the probability that the number on the drawn card is (i) divisible by 2 or 3 (ii) a prime number
24. If A(-4, 8), B(-3, -4), C(0, -5) and D(5, 6) are the vertices of a quadrilateral ABCD, find its area.
25. A well of diameter 4 m is dug 14 m deep. The earth taken out is spread evenly all around the well to form a 40 cm high embankment. Find the width of the embankment.
26. The numerator of a fraction is 3 less than its denominator. If 2 is added to both the numerator and the denominator, then the sum of the new fraction and original fraction is $\frac{29}{20}$. Find the original fraction.
27. Water is flowing at the rate of 2.52 km/h through a cylindrical pipe into a cylindrical tank, the radius of whose base is 40 cm. If the increase in the level of water in the tank, in half an hour is 3.15 m, find the internal diameter of the pipe.
28. Ramkali required Rs 2,500 after 12 weeks to send her daughter to school. She saved Rs 100 in the first week and increased her weekly saving by Rs 20 every week. Find whether she will be able to send her daughter to school after 12 weeks. What value is generated in the above situation?
29. Solve for x : $\frac{2}{x+1} + \frac{3}{2(x-2)} = \frac{23}{5x}$, $x \neq 0, -1, 2$
30. Prove that the tangent at any point of a circle is perpendicular to the radius through the point of contact.
31. In the below figure, tangents PQ and PR are drawn from an external point P to a circle with centre O, such that $\angle RPQ = 30^\circ$. A chord RS is drawn parallel to the tangent PQ. Find $\angle RQS$.

