

KENDRIYA VIDYALAYA SANGATHAN, HYDERABAD REGION
MOCK TEST PAPER 04 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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CLASS : X

MAX. MARKS : 90
DURATION : 3 HRS

General Instructions:

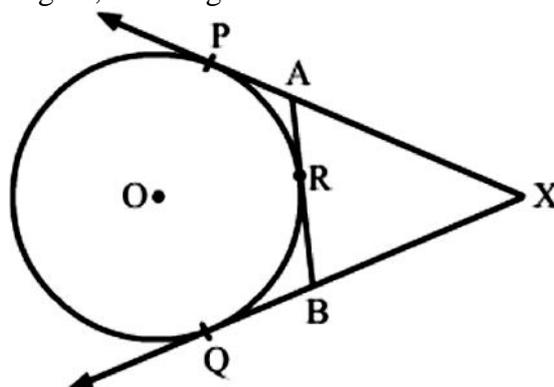
1. All questions are compulsory.
 2. Question paper is divided into four sections: Section A consists 4 questions each carry 1 marks, Sections B consists 6 questions each carry 2 marks, Sections C consists 10 questions each carry 3 marks and Sections D consists 11 questions each carry 4 marks.
 3. There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

1. Two concentric circles are of radii 5 cm and 3 cm. Length of the chord of the larger circle, (in cm), which touches the smaller circle is
2. Find the next term of the A.P. $\sqrt{7}, \sqrt{28}, \sqrt{63}, \dots$
3. A bag contains cards numbered from 1 to 25. A card is drawn at random from the bag. Find the probability that the number on this card is divisible by both 2 and 3.
4. If the height of a vertical pole is $\sqrt{3}$ times the length of its shadow on the ground, then the angle of elevation of the Sun at that time is

SECTION – B

5. P and Q are the points with co-ordinates (2, -1) and (-3, 4). Find the co-ordinates of the point R such that PR is $\frac{2}{3}$ of PQ.
6. In Figure 2, XP and XQ are two tangents to the circle with centre O, drawn from an external point X. ARB is another tangent, touching the circle at R. Prove that $XA + AR = XB + BR$.



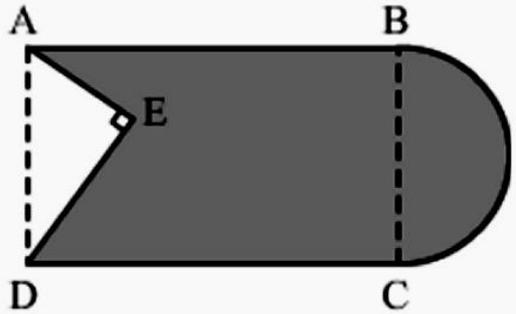
7. Prove that the tangents drawn at the ends of any diameter of a circle are parallel.
8. The sum of the first n terms of an A.P. is $5n - n^2$. Find the nth term of this A.P.

9. Find the value(s) of p for which the points $(p + 1, 2p - 2)$, $(p - 1, p)$ and $(p - 3, 2p - 6)$ are collinear.

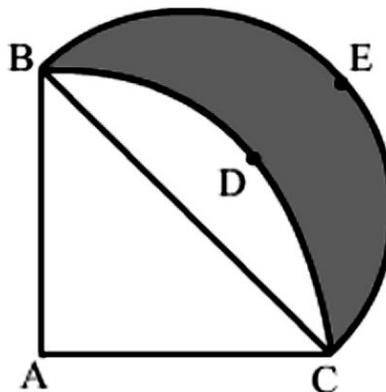
10. Solve for x : $\sqrt{3}x^2 - 2\sqrt{2}x - 2\sqrt{3} = 0$

SECTION – C

11. In Figure 4, from a rectangular region ABCD with $AB = 20$ cm, a right triangle AED with $AE = 9$ cm and $DE = 12$ cm, is cut off. On the other end, taking BC as diameter, a semicircle is added on outside the region. Find the area of the shaded region. [Use $\pi = 3.14$]



12. In Figure 5, ABCD is a quadrant of a circle of radius 28 cm and a semi circle BEC is drawn with BC as diameter. Find the area of the shaded region. [Use $\pi = \frac{22}{7}$]



13. A 5 m wide cloth is used to make a conical tent of base diameter 14 m and height 24 m. Find the cost of cloth used at the rate of Rs 25 per metre. [Use $\pi = \frac{22}{7}$]

14. A girl empties a cylindrical bucket, full of sand, of base radius 18 cm and height 32 cm, on the floor to form a conical heap of sand. If the height of this conical heap is 24 cm, then find its slant height correct upto one place of decimal.

15. Points P, Q, R and S divide the line segment joining the points $A(1, 2)$ and $B(6, 7)$ in 5 equal parts. Find the coordinates of the points P, Q and R.

16. The sum of the first 7 terms of an A.P. is 63 and the sum of its next 7 terms is 161. Find the 28th term of this A.P.

17. If 2 is a root of the quadratic equation $3x^2 + px - 8 = 0$ and the quadratic equation $4x^2 - 2px + k = 0$ has equal roots, find the value of k .

18. Two ships are approaching a light-house from opposite directions. The angles of depression of the two ships from the top of the light-house are 30° and 45° . If the distance between the two ships is 100 m, find the height of the light-house. (Use $\sqrt{3} = 1.732$)
19. All the diamond cards are removed from a deck of 52 playing cards and then well shuffled. Now one card is drawn at random from the remaining cards. Determine the probability that the card drawn is : i) a face card. ii) a red card. iii) a king.
20. A wooden block is made by scooping out a hemisphere from each end of a solid cylinder. If the height of the cylinder is 20 cm and its base is of radius 7 cm then find the total cost of polishing the souvenir at the rate of Rs. 15 per cm^2 .

SECTION – D

21. Construct a triangle PQR, in which $PQ = 6$ cm, $QR = 7$ cm and $PR = 8$ cm. Then construct another triangle whose sides are $\frac{4}{5}$ times the corresponding sides of ΔPQR .
22. A dice is rolled twice. Find the probability that (i) 5 will not come up either time. (ii) 5 will come up exactly one time. (iii) an even number in both the dice
23. Solve for x: $2\left(\frac{2x-1}{x+3}\right) - 3\left(\frac{x+3}{2x-1}\right) = 5, \left(x \neq -3, \frac{1}{2}\right)$
24. The sum of the squares of two consecutive even numbers is 340. Find the numbers.
25. If S_n denotes the sum of the first n terms of an A.P., prove that $S_{30} = 3(S_{20} - S_{10})$.
26. A hemispherical depression is cut out from one face of a cubical block of side 7 cm, such that the diameter of the hemisphere is equal to the edge of the cube. Find the surface area of the remaining solid. [Use $\pi = 3.14$]
27. A metallic bucket, open at the top, of height 24 cm is in the form of the frustum of a cone, the radii of whose lower and upper circular ends are 7 cm and 14 cm respectively. Find : (i) the volume of water which can completely fill the bucket. (ii) the area of the metal sheet used to make the bucket. [Use $\pi = \frac{22}{7}$]
28. The mid-point P of the line segment joining the points A(-10, 4) and B(-2, 0) lies on the line segment joining the points C(-9, -4) and D(-4, y). Find the ratio in which P divides CD. Also find the value of y.
29. A quadrilateral is drawn to circumscribe a circle. Prove that the sums of opposite sides are equal.
30. Prove that the tangent at any point of a circle is perpendicular to the radius through the point of contact.
31. The angle of elevation of the top of a chimney from the foot of a tower is 60° and the angle of depression of the foot of the chimney from the top of the tower is 30° . If the height of the tower is 40 m, find the height of the chimney. According to pollution control norms, the minimum height of a smoke emitting chimney should be 100 m. State if the height of the above mentioned chimney meets the pollution norms. What value is discussed in this question?