

KENDRIYA VIDYALAYA SANGATHAN, HYDERABAD REGION
MOCK TEST PAPER 05 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	2(2)	4(2)	9(3)	8(2)	23(9)
Geometry Circles & Construction	--	--	9(3)	8(2)	17(5)
Trigonometry Heights & Distances	--	--	--	8(2)	08(2)
Probability	1(1)	--	3(1)	4(1)	08(3)
Coordinate Geometry	1(1)	2(1)	--	8(2)	11(4)
Mensuration Areas related to Circles & Surface Areas and Volumes	--	6(3)	9(3)	8(2)	23(8)
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

KENDRIYA VIDYALAYA SANGATHAN, HYDERABAD REGION
MOCK TEST PAPER 05 FOR SA - II (2016-17)

SUBJECT: MATHEMATICS
CLASS : X

MAX. MARKS : 90
DURATION : 3 HRS

General Instructions:

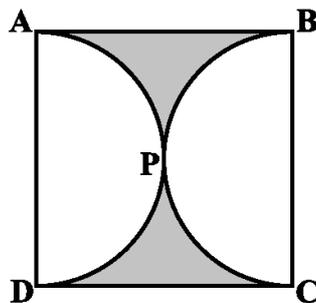
1. All questions are compulsory.
 2. Question paper is divided into four sections: Section A consists 4 questions each carry 1 marks, Sections B consists 6 questions each carry 2 marks, Sections C consists 10 questions each carry 3 marks and Sections D consists 11 questions each carry 4 marks.
 3. There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

SECTION – A

1. Find the value of a, for which point P ($\frac{a}{3}, 2$) is the midpoint of the line segment joining the points Q (-5, 4) and R(-1, 0).
2. Find the value of k, for which one root of the quadratic equation $kx^2 - 14x + 8 = 0$ is six times the other.
3. Find the 10th term of the sequence $\sqrt{2}, \sqrt{8}, \sqrt{18}, \dots$
4. Out of 200 bulbs in a box, 12 bulbs are defective. One bulb is taken out at random from the box. What is the probability that the drawn bulb is not defective?

SECTION – B

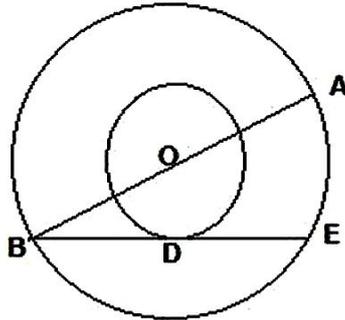
5. Find the perimeter of the shaded region if ABCD is a square of side 21 cm and APD & CPB are semicircles. (Use $\pi = 22/7$).



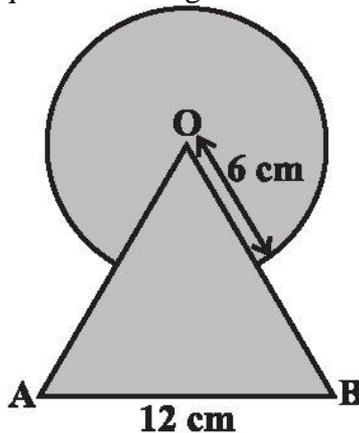
6. A sphere of diameter 6cm is dropped in a right circular cylindrical vessel partly filled with water. The diameter of the cylindrical vessel is 12 cm. If the sphere is completely submerged in water, by how much will the level of water rise in the cylindrical vessel?
7. Find the number of coins of 1.5 cm diameter and 0.2 cm thickness to be melted to form a right circular cylinder of height 10 cm and diameter 4.5 cm.
8. If 2 is a root of the equation $x^2 + kx + 12 = 0$ and the equation $x^2 + kx + q = 0$ has equal roots, find the value of q.
9. How many two digit numbers are divisible by 7?
10. Find a relation between x & y such that the point P(x,y) is equidistant from the points A(-5,3) and B(7,2).

SECTION – C

11. In the given figure, the radii of two concentric circles are 13 cm and 8 cm. AB is diameter of the bigger circle. BD is the tangent to the smaller circle touching it at D. Find the length AD.



12. Draw a triangle ABC in which $AB = 5\text{ cm}$, $BC = 6\text{ cm}$ and $\angle ABC = 60^\circ$. Construct a triangle whose sides are $\frac{5}{7}$ times the corresponding sides of triangle ABC.
13. P & Q are centres of circles of radii 9 cm and 2 cm respectively. $PQ = 17\text{ cm}$. R is the centre of the circle of radius x cm which touches the above circle externally. Given that $\angle PRQ$ is 90° . Write an equation in x and solve it.
14. One card is drawn from a well shuffled deck of 52 cards. Find the probability of getting (a) Non face card, (b) Black king or a Red queen, (c) Spade card.
15. Solve: $\frac{1}{a+b+x} = \frac{1}{a} + \frac{1}{b} + \frac{1}{x}$, $a+b \neq 0$
16. In an AP, the sum of first n terms is $\frac{3n^2}{2} + \frac{13n}{2}$. Find the 25th term.
17. The ninth term of an AP is equal to seven times the second term and twelfth term exceeds five times the third term by 2. Find the first term and the common difference.
18. Find the area of shaded region shown in the given figure where a circular arc of radius 6 cm has been drawn with vertex O of an equilateral triangle OAB of side 12 cm as centre.



19. Water is flowing at the rate of 0.7 m/sec through a circular pipe whose internal diameter is 2 cm into a cylindrical tank, the radius of whose base is 40 cm. Determine the increase in the level of water in half hour.
20. The perimeters of the ends of the frustum of a cone are 207.24 cm and 169.56 cm. If the height of the frustum be 8 cm, find the whole surface area of the frustum. (Use $\pi = 3.14$)

SECTION – D

21. Draw a pair of tangents inclined to each other at an angle of 60° to a circle of radius 3 cm.
22. From the top of tower, 100 m high, a man observes two cars on the opposite sides of the tower with the angles of depression 30° & 45° respectively. Find the distance between the cars. (Use $\sqrt{3}=1.73$).
23. From a point on the ground, the angles of elevation of the bottom and top of a tower fixed at the top of a 20 m high building are 45° & 60° respectively. Find the height of the tower.
24. Cards marked with numbers 3, 4, 5,, 50 are placed in a bag and mixed thoroughly. One card is drawn at random from the bag. Find the probability that number on the card drawn is: (a) divisible by 5 (b) a perfect square (c) a number divisible by 2 and 3.
25. If $P(9a - 2, -b)$ divides the line segment joining $A(3a + 1, -3)$ and $B(8a, 5)$ in the ratio 3 : 1. Find the values of a & b.
26. Find the coordinates of the points which divide the line segment joining $A(2, -3)$ and $B(-4, -6)$ into three equal parts.
27. Four equal circles are described at the four corners of a square so that each touches two of the others. The shaded area enclosed between the circles is $\frac{24}{7} \text{ cm}^2$. Find the radius of each circle.
28. A right triangle having sides 15 cm and 20 cm is made to revolve about its hypotenuse. Find the Volume and Surface Area of the double cone so formed. (Use $\pi=3.14$).
29. Three eighth of the students of a class opted for visiting an old age home. Sixteen students opted for having a nature walk. Square root of total number of students in the class opted for tree plantation in the school. The number of students who visited an old age home is same as the number of students who went for a nature walk and did tree plantation. Find the total number of student. What values are inculcated in students through such activities?
30. The minimum age of children to be eligible to participate in a painting competition is 8 years. It is observed that the age of youngest boy was 8 years and the ages of rest of participants are having a common difference of 4 months. If the sum of ages of all the participants is 168 years, find the age of eldest participant in the painting competition.
31. Prove that the lengths of the tangents drawn from an external point to a circle are equal. Using the above theorem, prove that $AB + CD = AD + BC$, if a quadrilateral ABCD is drawn to circumscribe a circle.