

KENDRIYA VIDYALAYA SANGATHAN, HYDERABAD REGION
MOCK TEST PAPER 01 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	-	6(3)	3(1)	8(2)	17(6)
Trigonometry Heights & Distances	1(1)	-	3(1)	4(1)	08(3)
Probability	1(1)	-	3(1)	4(1)	08(3)
Coordinate Geometry	1(1)	-	6(2)	4(1)	11(4)
Mensuration Areas related to Circles & Surface Areas and Volumes	-	2(1)	9(3)	12(3)	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:

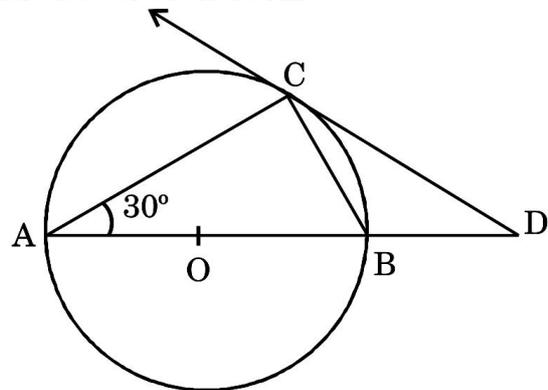
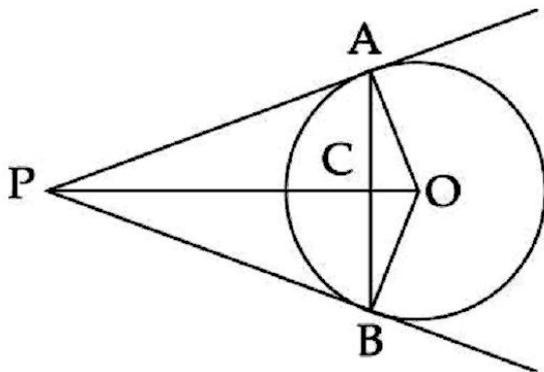
1. All questions are compulsory.
2. Question paper is divided into four sections: Section A consists 4 questions each carry 1 marks, Sections B consists 6 questions each carry 2 marks, Sections C consists 10 questions each carry 3 marks and Sections D consists 11 questions each carry 4 marks.
3. There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

SECTION – A

1. If first term of an A.P. $a = b + 1$, common difference $= d = -2$ and $a_6 = 2b$ then find the value of b .
2. An observer 1.5 metres tall is 18.5 metres away from the tower. The angle of elevation of the top of the tower from his eye is 45° . What is the height of the tower ?
3. Find the distance between the points $(0, 3)$ and $(4, 0)$
4. A letter is chosen at random from the English alphabets what is the probability it is a letter of the word "IMAGINATION".

SECTION – B

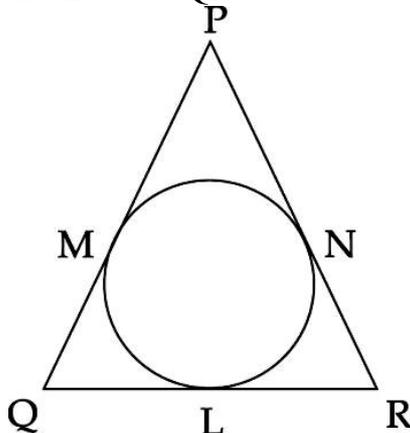
5. From an external point P, two tangents PA and PB are drawn to a circle with centre O as shown in the below figure. Prove that OP is the perpendicular bisector of chord AB.



6. In the above right sided figure, AB is a diameter of a circle with centre O and AC is its chord such that $\angle BAC = 30^\circ$. If the tangent drawn at C intersects extended AB at D, then show that $BC = BD$.
7. Draw a line segment of length 7.4 cm and divide it in the ratio 4 : 7.
8. An athlete runs on a circular track of radius 49 m and covers a distance of 3080 m along its boundary. How many rounds has he taken to cover this distance ? (Use $\pi = 22/7$)
9. If -5 is a root of the quadratic equation $2x^2 + px - 15 = 0$, find the value of p .
10. Which term of the AP: 3, 15, 27, 39, will be 132 more than its 54th term ?

SECTION – C

11. Find the sum of all natural numbers between 200 and 1502 which are exactly divisible by 3.
12. If $(x^2 + y^2)(a^2 + b^2) = (ax + by)^2$, prove that $\frac{x}{a} = \frac{y}{b}$
13. In ΔPQR of the given figure, if $PQ = PR$ and the incircle of ΔPQR touches QR , RP and PQ at L , N and M respectively prove that L bisects QR .

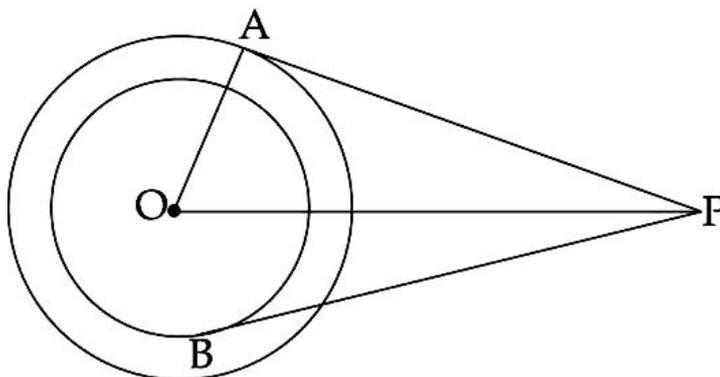


14. From a point on the ground the angle of elevations of the bottom and top of a water tank kept on the top of the 30 m high building are 45° and 30° respectively. Find the height of the water tank.
15. A pair of dice is thrown once. What is the probability of getting the number 4 on one die at least?
16. The line segment joining the points $(3, 6)$ and $(9, -3)$ is trisected at the points P and Q . If P lies on the line $3x - 2y - k = 0$, find the value of k .
17. Show that a lines OA and OB are perpendicular, where A , B and O are the points $(5, 4)$, $(4, -5)$ and $(0, 0)$ respectively.
18. The cost of fencing a circular field at the rate of ` 30 per metre is ` 6600. The field is to be ploughed at the rate of ` 1.50 per square metre. Find the cost of ploughing the field. (Use $\pi = \frac{22}{7}$)
19. The dimensions of a metallic cuboid are $100 \text{ cm} \times 80 \text{ cm} \times 64 \text{ cm}$. It is melted and recast into a cube. Find the surface area of the cube.
20. Some children playing with clay made 10 cubical dice from it. If they made it from the clay piece 18 cm by 15 cm by 8 cm , then what will be the edge of the die, assuming that there is no wastage ?

SECTION – D

21. One card is drawn from a well shuffled deck of 52 cards. Find the probability of getting.
- a queen or jack
 - a black face card
22. The vertices of a quadrilateral $ABCD$ are $A(-8, 7)$, $B(-4, -5)$, $C(-1, -6)$ and $D(4, 5)$. Find the mid-point of each side. Join the mid-points in order to get a parallelogram and find the area of the parallelogram thus obtained.

23. In the given figure, O is the centre of two concentric circles of radii 5 cm and 3 cm. From an external point P tangents PA and PB are drawn to these circles. If PA = 12 cm, then find perimeter of quad PAOB.



24. Construct a pair of tangents PQ and PR to a circle of radius 4 cm from a point P outside the circle 8 cm away from the centre. Measure PQ and PR.
25. Find the positive value of k for which $x^2 + kx + 64 = 0$ and $x^2 - 8x + k = 0$ will have real roots.
26. The 10th term of an AP is 52 and 16th term is 82. Find the 32nd term and the general term.
27. An aeroplane left 40 minutes late due to heavy rains and in order to reach its destination, 1600 km away in time, it had to increase its speed by 400 km/hour from its original speed. Find the original speed of the aeroplane.
28. An aeroplane at an altitude of 300 m observes the angles of depression of opposite points on the two banks of a river to be 45° and 60° . Find the width of the river.
29. Akshay took a right circular cylinder having base diameter 12cm and height 15cm and filled it completely with ice-cream. He then went to a slum area and distributed the ice-cream filled in cones of height 12cm and diameter 6cm each having a hemispherical shape on the top to the needy children. Find the number of children who will get ice cream in these cones. What are the values of Akshay that are depicted here ?
30. A rectangular park is of dimensions $100\text{ m} \times 50\text{ m}$. It is surrounded by semi-circular flower beds all round. Find the cost of levelling the semi-circular beds at ` 0.75 per square metre. (Use $\pi = 3.14$).
31. A cone, a hemisphere and a cylinder stand on equal bases and have same heights as the radii of the bases. Show that their volumes are in the ratio 1 : 2 : 3.