

KENDRIYA VIDYALAYA SANGATHAN, HYDERABAD REGION
MOCK TEST PAPER 02 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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MOCK TEST PAPER 01 FOR SA - II (2016-17)

SUBJECT: MATHEMATICS

MAX. MARKS : 90

CLASS : X

DURATION : 3 HRS

General Instructions:

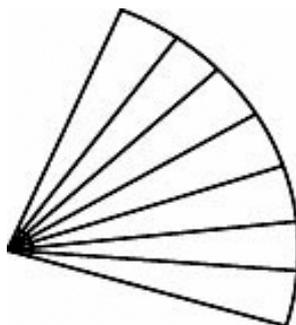
1. All questions are compulsory.
2. Question paper is divided into four sections: Section A consists 4 questions each carry 1 marks, Sections B consists 6 questions each carry 2 marks, Sections C consists 10 questions each carry 3 marks and Sections D consists 11 questions each carry 4 marks.
3. There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

SECTION – A

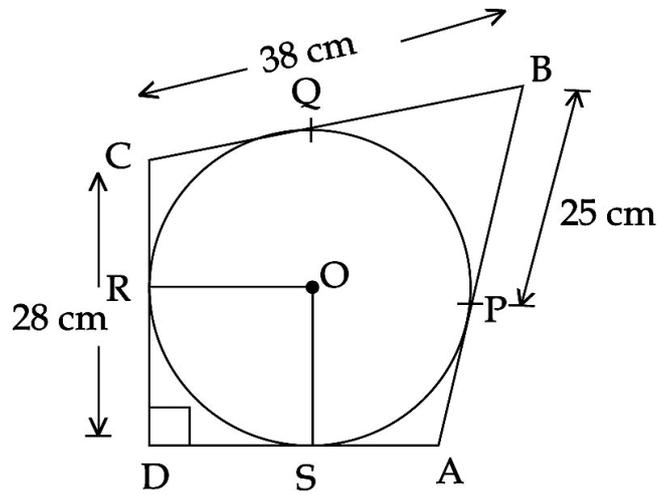
1. If the third term of an AP is 12 and the seventh term is 24, then the 10th term is
2. What is the angle of elevation of the Sun when the length of the shadow of a vertical pole is equal to its height?
3. If the line segment joining the points P and Q (3, -4) is bisected at origin, find the coordinates of P.
4. If the letters of the word 'RAMANUJAN' are put in a box and one letter is drawn at random, find the probability of drawing the alphabet A.

SECTION – B

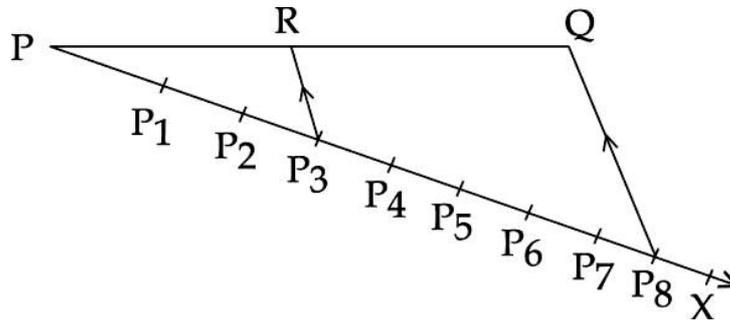
5. A Japanese fan can be made by sliding open its 7 small sections (or leaves), which are each in the form of sectors of a circle having central angle of 15° . If the radius of this fan is 24 cm, find out the length of the lace that is required to cover its entire boundary (See figure). $\left[\text{Use } \pi = \frac{22}{7} \right]$



6. If one root of the quadratic equation $2x^2 - 3x + p = 0$ is 3, find the value of p and other root of the quadratic equation.
7. Determine the common difference of the AP whose 3rd term is 5 and the 5th term is 9.
8. Two tangents PA and PB are drawn to the circle with centre O such that $\angle APB = 120^\circ$. Prove that $OA = \sqrt{3} AP$.
9. In the given figure, ABCD is a quadrilateral in which $\angle ADC = 90^\circ$, $BC = 38\text{cm}$, $CD = 28\text{cm}$ and $BP = 25\text{cm}$. Find the radius of the circle with centre O.



10. In the below figure, P_1, P_2, P_3, \dots are points on ray PX at equal distances and $P_3R \parallel P_8Q$. Find PR , if $RQ = 7.5$ cm.



SECTION – C

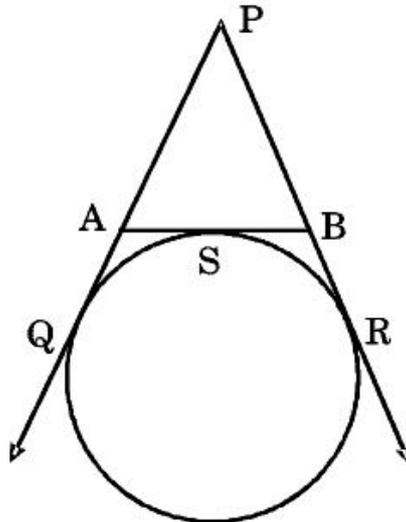
11. Solve the quadratic equation : $21x^2 - 8x - 4 = 0$
12. Find the sum of all 3 digit numbers which are divisible by 11.
13. Draw a ΔABC in which $BC = 12$ cm, $AB = 5$ cm and $\angle B = 90^\circ$. Construct a triangle similar to ΔABC with scale factor $\frac{2}{3}$.
14. On a horizontal plane, there is a tower with a flagpole on the top of the tower. At a point, 9 metres away from the foot of the tower, the angles of elevation of the top and bottom of the flagpole are 60° and 30° respectively. Find the height of the tower and that of the flagpole mounted on it.
15. The blood groups of 500 people are distributed as follows : 150 have A blood type, 80 have B blood type, 100 have O blood type and remaining have AB type blood. If a person from this group is selected at random, what is the probability that this person has :
- A blood type.
 - B blood type.
 - AB blood type.
16. Somnath has a wheel of radius 84 cm. How many revolutions will it make to cover a distance of 1.056 km ? (Use $\pi = \frac{22}{7}$)
17. Using paper-mache, a student made a right circular hollow cone of height 15 cm and radius of base 8 cm. He then has to paint this cone from outside and inside both. Find is the total surface area that has to be painted.

18. Determine the ratio in which the point $(6, m)$ divides the join of points $A(9, 5)$ and $B(4, 2)$. Also, find the value of m .
19. For what value of p , the points $(-5, 3)$, $(1, p)$ and $(0, -2)$ are collinear ?
20. From a solid hemisphere of radius 3 m, a cone is to be carved out. Find the maximum volume of the cone that can be carved out of it. (Take $\pi = 3.14$).

SECTION – D

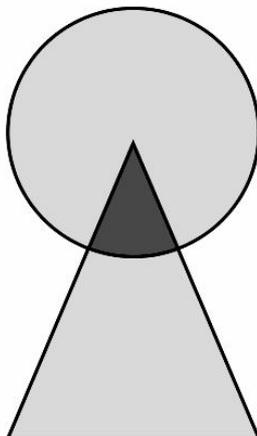
21. A journey of 192 km from a town A to town B takes 2 hours more by an ordinary passenger train than an express train. If the speed of the express train is 16 km/h more, find the speed of the express and the passenger train.
22. Mr. John runs a scooter manufacturing factory. His factory produces 1100 scooters in the third year and the production in the eleventh year is 2700. If the production increases by a steady rate every year, find the production of scooters in the 25th year and the total number of scooters produced in all these 25 years.
23. Solve for x : $\left(\frac{2x}{x-5}\right)^2 + \frac{10x}{x-5} - 24 = 0, x \neq 5$

24. In the given figure, PQ, PR and AB are tangents at points Q, R and S respectively of a circle. If $PQ = 8$ cm, find the perimeter of $\triangle APB$.

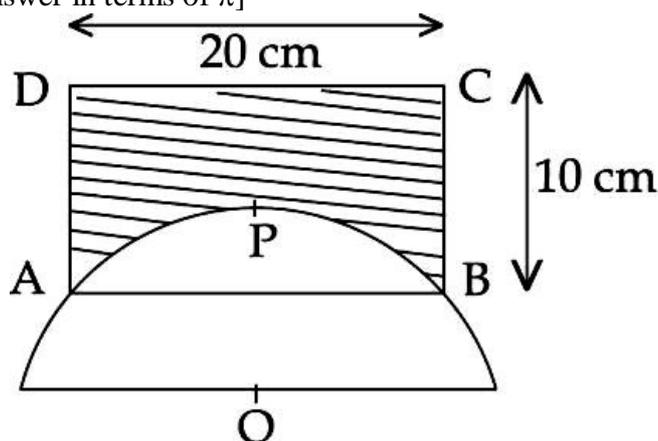


25. Draw a line segment AB of length 6 cm. Taking A as centre, draw a circle of radius 2.5 cm and taking B as centre, draw another circle of radius 3.5 cm. Construct tangents to each circle from the centre of the other circle.
26. From a point P on the ground, the angle of elevation of the top of a 10 m tall building is 30° . A flag-staff is hoisted at the top of the building and the angle of elevation of the top of the flag-staff from P is 45° . Find the length of the flag-staff and the distance of the building from the point P.
27. Card marked with numbers, 1,3,5, _ _ _ _ _ 99 are put in a box and mixed thoroughly. A card is drawn at from the box. Find the probability that the number on the drawn card is :
- a prime number less than 25.
 - an odd composite number less than 15

28. If $(-5, 7)$, $(-4, -5)$, $(-1, -6)$ and $(4, 5)$ are the vertices of a quadrilateral, taken in order, then find the area of the quadrilateral.
29. A girl prepares a poster with the slogan "SAVE TREES" on a circular sheet of radius 6 cm which has been drawn at vertex of an equilateral triangle of side 12 cm as centre. Find the area of the shaded portion. What value is depicted by the girl? (Use $\pi = \frac{22}{7}$)



30. ABCD is a rectangle of dimensions $20\text{ cm} \times 10\text{ cm}$. A semi-circle is drawn with centre at O and radius $10\sqrt{2}\text{ cm}$ and it passes through A and B as shown in the figure. Find the area of shaded region. [Leave the answer in terms of π]



31. A cylindrical vessel of diameter 14 cm and height 42 cm is fixed symmetrically inside another cylindrical vessel of diameter 16 cm and height 42 cm. The total space between the two vessels is filled with cork dust for heating insulation purpose. How many cubic centimetres of cork dust is required for the purpose? (Use $\pi = \frac{22}{7}$)
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