KENDRIYA VIDYALAYA SANGATHAN JAMMU REGION

(PRE-BOARD 1 EXAMINATION) 2025-26 (SET NO. 01)

Class : X **Max. Marks: 80**

Subject: Standard Maths (041) **Time Allowed:03hrs.**

General Instructions:

Read the following instructions carefully :

1.This question paper contains 38 questions. All Questions are compulsory.

2. This Question Paper is divided into 5 Sections A, B, C, D and E.

3. In Section A, Question numbers 1-18 are multiple choice questions (MCQs) and questions no. 19 and 20 are Assertion- Reason based questions of 1 mark each.

4. In Section B, Question numbers 21-25 are very short answer (VSA) type questions, carrying 02 marks each.

5. In Section C, Question numbers 26-31 are short answer (SA) type questions, carrying 03 marks each.

6. In Section D, Question numbers 32-35 are long answer (LA) type questions, carrying 05 marks each.

7. In Section E, Question numbers 36-38 are case study-based questions carrying 4 marks each with sub parts of the values of 1, 1 and 2 marks each respectively.

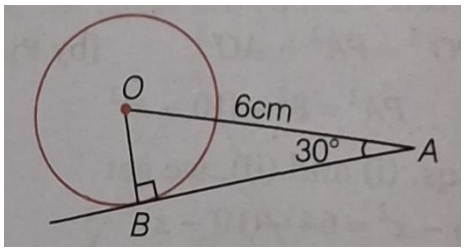
8. There is no overall choice. However, an internal choice in 2 questions of Section B, 2 questions of Section C and 2 questions of Section D has been provided. An internal choice has been provided in all the 2 marks questions of Section E.

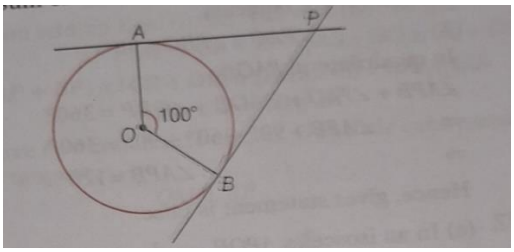
9. Draw neat and clean figures wherever required. Take π =$\frac{22}{7}$ wherever required if not stated.

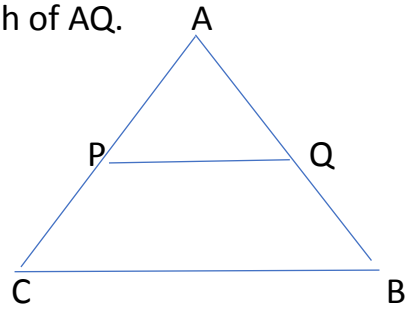
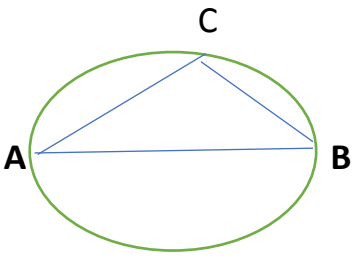
10.Use of calculators is not allowed.

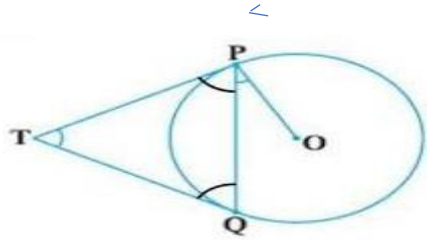
(SECTION A)
Section A consists of 20 questions of 1 Mark each.

Q.NO.	Questions	Marks
1.	If a = p^2q and b = pq^2 then LCM will be?	1

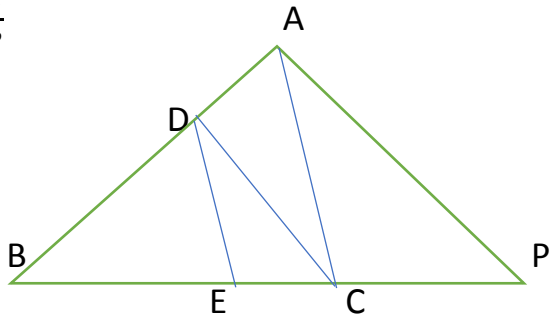
	(a) p^2q^2 (b) p q (c) pq^2 (d) pq^3	
2.	The values of k for which the quadratic equation $4x^2$+kx+9=0 has real and equal roots are: (a)±11 (b) ±12 (c) ±6 (d)±3	1
3.	The value of k for which the system of linear equations x+2y=3,5x+ky+7=0 is inconsistent is: (a)- $\frac{14}{3}$ (b) $\frac{2}{5}$ (c) 5 (d) 10	1
4.	In the given figure, AB is a tangent to the circle centred at O. If OA = 6cm and <OAB=30^0 , then the radius of the circle is:  (a)3cm (b)3$\sqrt{3}$ cm (c) 2cm (d) $\sqrt{3}$ cm	1
5.	Given that sin α = $\frac{1}{2}$ and cos β = $\frac{1}{2}$ then the value of (α + β) is: (a)0^0 (b) 30^0 (c) 60^0 (d) 90^0	1
6.	The distance of the point (-6,8) from X-axis is: (a)6 units (b) -6 units (c) 8 units (d) 10 units	1
7.	If the perimeter and the area of a circle are numerically equal, then the radius of the circle is: (a)2 units (b) 1 units (c) 4 units (d) 7 units	1
8.	A pair of dice is tossed. The probability that the sum of the outcomes is less than 11 is: (a)$\frac{29}{36}$ (b) $\frac{7}{36}$ (c) $\frac{11}{12}$ (d) $\frac{1}{6}$	1
9.	If t=45^0, what is the value of Sect sin t – cosec t cos t (a)-2 (b) -1 (c) 0 (d) none of these	1
10.	The ratio of LCM and HCF of the least composite and the least prime number is (a) 1:2 (b) 1:1 (c) 2:1 (d) 1:3	1
11.	The volume of a right circular cone whose area of the base is 156$cm^2$and the vertical height is 8 cm, is: (a)2496cm^3 (b) 1248cm^3 (c) 1664 cm^3 (d) 416 cm^3	1

12.	If one of the zeroes of the quadratic polynomial x^2 + 3 x + k is 2, then the value of k is (a)-10 (b) 10 (c) 5 (d) -5	1
13.	If the area of a sector of a circle is $\frac{1}{20}$ of the area of the circle , then the angle at the centre is equal to : (a)30^0 (b) 10^0 (c) 20^0 (d) 18^0	1
14.	D and E are respectively the points on the sides AB and AC of a triangle ABC such that DE// BC .If AD = 5.6cm, , DB = 4cm , AE=7cm , then AC equals: (a) 2.8cm (b) 5.6cm (c) 5cm (d)12cm	1
15.	The probability of guessing the correct answer to a test question is $\frac{x}{6}$. If the probability of not guessing the correct answer is $\frac{2}{3}$, then the value of x is: (a)2 (b) 3 (c) 4 (d) 6	1
16.	If P is the mid point of the line segment joining the points A(-2,8) and B(-6,-4) , then the co-ordinates of P are: (a)(-4,2) (b) (2,-4) (c) (6,8) (d) (-6,8)	1
17.	If every term of the statistical data consisting of n terms is decreased by 2, then the mean of the data : (a)decreases by 2 (b) remains unchanged (c) decreases by 2n (d) decreases by 1	1
18.	If the angle between two radii of a circle is 100^0 , the angle inclined between the tangents at the ends is:  (a) 50^0 (b) 60^0 (c) 80^0 (d)90^0	1
	Assertion And Reason questions: In the following questions, a statement of assertion is followed by a statement of reason. Mark the correct choice as: (a) Both Assertion (A) and Reason (R) are true and Reason (R) is the correct explanation of Assertion (A). (b) Both Assertion (A) and Reason (R) are true but Reason (R) is not the correct explanation of Assertion (A). (c) Assertion (A) is true but Reason (R) is false. (d) Assertion (A) is false but Reason (R) is true	

19.	Assertion(A): 15^n ends with the digit zero , where n is a natural number. Reason(R): Any number ends with digit zero, if its prime factor is of the form $2^m x 5^n$, where m and n are natural numbers.	1
20.	Assertion(A): sin^2 A + cos^2A = 1 Reason (R): For any angle A, $(\sin A + \cos A)^2$ =1	1
	(SECTION B) **Section B consists of 05 questions of 2 Mark each.**	
21.	Find the sum of first 20 terms of the AP whose nth term is given as a_n=5-2n OR Find the middle term of the A.P. 6, 13, 20, ..., 216?	2
22.	If x = a cos θ – b sin θ and y = a sin θ + b cos θ, then prove that $a^2+b^2=x^2+y^2$	2
23.	In the given figure, PQ ‖ BC, PQ=3cm, BC=9cm and AC=7.5cm. Find the length of AQ. 	2
24.	The length of the minute hand of a clock is 7 cm. Find the area swept by it when it moves from 7:05 p.m. to 7:40 p.m. OR Find the length of an arc with a radius of 18cm subtending an angle of 70^0 at the centre.	2
25.	In the figure below, AB is the diameter of the circle and C is a point on the circumference of the circle with centre O. If ∠ABC=50^0, what is the measure of ∠BAC? 	2
	(SECTION C) **Section C consists of 06 questions of 3 Mark each.**	
26.	Two tangents TP and TQ are drawn to a circle with centre O from an external point T. Prove that ∠PTQ = 2 ∠OPQ.	3

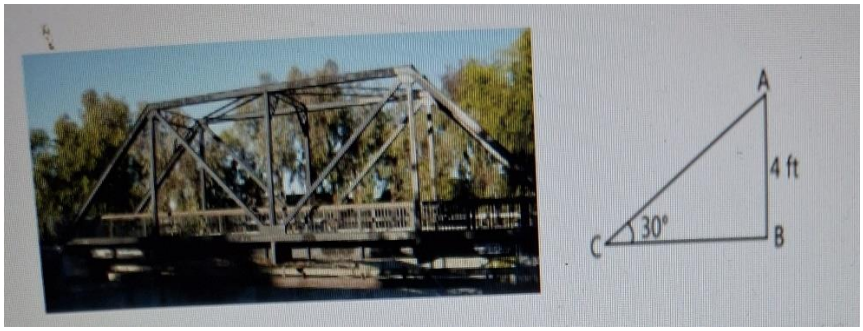
		
27.	Prove that 5 + 2√7 is irrational.	3
28.	Find the zeroes of the quadratic polynomial $3x^2$-x- 4 and verify the relationship between the zeroes and the coefficients.	3
29.	The monthly incomes of two persons are in the ratio 9:7 and their monthly expenditures are in the ratio 4:3.If each saved Rs 5,000. Express the given situation algebraically as a system of linear equations in two variables. Hence , find their respective monthly incomes. **OR** Determine graphically the co-ordinates of the vertices of a triangle , the equations of whose sides are given by 2y-x=8, 5y-x=14 and y-2x=1	3
30.	If $\sin\theta+\cos\theta=\sqrt{2}$, then prove that $\tan\theta+\cot\theta$ =2 OR Prove that $\frac{sin\theta-2sin^3\theta}{2cos^3\theta-\cos\theta}$ =tan θ	3
31.	A fruit basket contains 3 Oranges, 1 Apple, 5 Pomegranates and 6 Bananas. i)Anirudh picks a fruit from the basket at random to eat. What is the probability that he picks an Apple? ii)After Anirudh eats an apple , Aryan picks a fruit at random to eat. What is the probability that Aryan picks a Banana? iii)After Anirudh and Aryan eat an Apple and a Banana respectively , Siddharth picks a fruit at random to eat. What is the probability that Siddharth picks an Apple?	3
	(SECTION D) **Section D consists of 04 questions of 5 Mark each**	
32.	A train travels at a certain average speed for a distance of 54 Km and then travels a distance of 63Km at an average speed of 6Km/h more than the first speed. If it takes 3h to complete the journey , what was its original average speed?	5

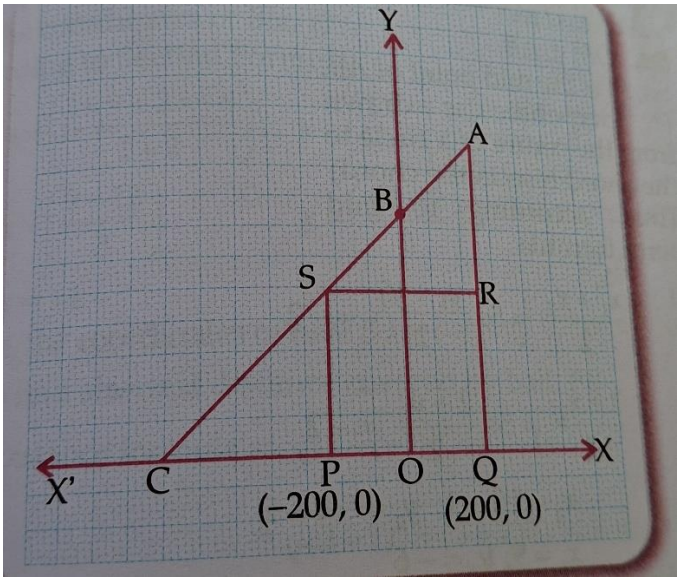
<table>
<tr><td>33.</td><td>Prove that if a line is drawn parallel to one side of a triangle to intersect the other two sides in distinct points, the other two sides are divided in the same ratio.

Also In the given figure , DE ∥ AC and DC ∥ AP. Prove that $\frac{BE}{EC}=\frac{BC}{CP}$
 
</td><td>5</td></tr>
<tr><td>34.</td><td>A medicine capsule is in the shape of a cylinder with two hemispheres stuck to each of its ends. The length of the entire capsule is 14 mm and the diameter of the capsule is 5 mm. Find its surface area.

OR
A solid is in the shape of a right circular cone surmounted on a hemisphere , the radius of each of them being 7 cm and height of cone is equal to his diameter. Find the volume of the solid.</td><td>5</td></tr>
<tr><td>35.</td><td>The distribution below gives the marks of 200 students of a class, if the median marks are 48, find the frequencies f1 and f2
<table>
<tr><td>Marks</td><td>10-20</td><td>20-30</td><td>30-40</td><td>40-50</td><td>50-60</td><td>60-70</td><td>70-80</td></tr>
<tr><td>No. of students</td><td>12</td><td>30</td><td>f1</td><td>65</td><td>f2</td><td>25</td><td>18</td></tr>
</table>
OR
230 apples of a box were weighted and the distribution of masses of the apples is given in the following table

<table>
<tr><td>Mass(in grams)</td><td>No. of apples</td></tr>
<tr><td>60-80</td><td>10</td></tr>
<tr><td>80-100</td><td>20</td></tr>
<tr><td>100-120</td><td>60</td></tr>
<tr><td>120-140</td><td>x</td></tr>
<tr><td>140-160</td><td>70</td></tr>
<tr><td>160-180</td><td>60</td></tr>
</table>
Find the value of x and the mean mass of the apples. Also find the modal mass of the apples.</td><td>5</td></tr>
<tr><td></td><td></td><td></td></tr>
</table>

	(SECTION E) **Section E consists of 03 questions of 4 Mark each**	
36.	In structural design, a structure is composed of triangles that are interconnecting. A truss a series of triangle in same plane end is one of the major types of engineering structures and is especially used in the design of bridges and buildings. Trusses are designed to support loads, such as the weight of people. A truss is exclusively made of long, straight members connected by joints at the end of each member. This is a single repeating triangle in a truss system. Based on the above information, solve the following:  (i)In the above triangle, what is the length of AC? (1) ii) In the above triangle, what is the length of BC? (1) iii) If sin A = sin C, what will be the length of BC? OR If the length of AB doubles, what will be the length of AC? (2)	4
37.	A man wants to buy a car and plans to take a loan from a bank for the same . He repays his total loan of 1,50,000 by paying every month, starting with the first instalment of Rs 1500. If he increases the instalment by Rs 200 every month. Then answer the following questions:  i)The amount paid by him in 30^{th} instalment is ? (1) ii)The amount paid by him in 30 instalments is ? (2) OR If amount paid in the last instalment is 7900, then the total instalments are? iii)What amount does he still have to pay after 30^{th} instalment. (1)	4

38.	Jagmohan has a field which is in the shape of a right angled triangle AQC. He wants to leave a space in the form of a square PQRS inside the field to grow wheat and the remaining to grow vegetables(as shown in the figure). In the field , there is a pole marked as O.  Now answer the following questions: i)Taking O as the origin , the co-ordinates of P are (-200,0) and of Q are (200,0). PQRS being a square ,what are the co-ordinates of R and S? (1) ii) What is the area of square PQRS? OR What is the length of diagonal PR in square PQRS? (2) iii)If S divides CA in the ratio K:1, what is the value of K, where point A is (200,800)? (1)	4