केन्द्रीय विद्यालय संगठन तिनसुकिया संभाग

KENDRIYA VIDYALAYA SANGATHAN TINSUKIA REGION

पूर्व परिषदीय परीक्षा 2025-26 / PRE-BOARD EXAMINATION 2025-26

विषय / Subject :- MATHEMATICS (BASIC) **विषय कोड** (**सीबीएसई**)/Subject Code (CBSE) :-241

कक्षा/ Class:-**दसवीं**-X

निर्धारित समय / Time Allowed:- 3 **घंटे** **अधिकतम अंक** / Maximum Marks :-80

सामान्य निर्देश / GENERAL INSTRUCTIONS:-

निम्नलिखित निर्देशों को ध्यानपूर्वक पढ़िए एवं उनका पालन कीजिये :

Read the following instructions carefully and follow them:

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 number 1-18 are multiple choice questions (MCQs) and question 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 ,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 $\pi = 22/7$ wherever required if not stated.

10.Use of calculator is not allowed.

SECTION -A

(MULTIPLE CHOICE QUESTION)

Each MCQ of 1mark, has four options with only one correct option, choose the correct option

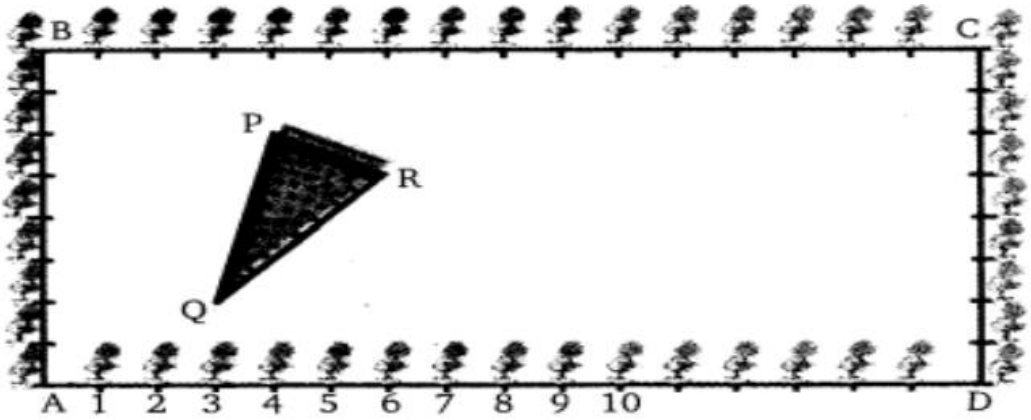
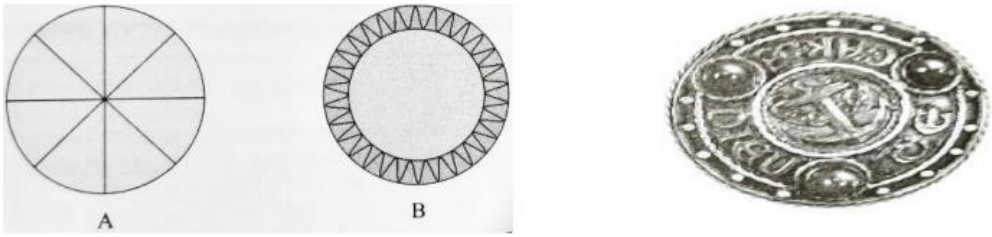
Q1	The HCF of two numbers is 12 and their LCM is 924. If one number is 132, then the other is: (a) 42 (b) 84 (c) 72 (d) 108	1
Q2	If the zeroes of the quadratic polynomial $x^2-63x+kx^2$ are reciprocal to each other, then the value of k is: a) 63 b) 1 c) -1 d) -63	1
Q3	The solution of a pair of linear equations in two variables is: (a) Any two values of variables (b) The point where the two lines intersect (c) The slope of the lines (d) Always unique	1

Q4	The discriminant of the equation $2x^2 – 3x + 5 = 0$ (a) –31 (b) 31 (c) –29 (d) 29	1
Q5	If the first term of an AP is 5 and the 8th term is 26, then the common difference is (a) 2 (b) 3 (c) 4 (d) 5	1
Q6	The 21st term of the AP whose nth term is is 3n+2 (a) 62 (b) 63 (c) 64 (d) 65	1
Q7	The midpoint of the line segment joining P (6,-4) and Q (2,8) is (a)(4,2) (b) (3,4) (c) (2,-2) (d) (5,-6)	1
Q8	The distance between the point A is (3,-2) and B is (-1,7) is (a)97 (b)5 (c)$\sqrt{97}$ (d)$\sqrt{65}$	1
Q9	The value of $\sin^2 45° + \cos^2 45°$ is: A) 0 B) 1 C) 1/2 D) 2	1
Q10	If a triangle has sides 13 cm, 12 cm and 5 cm, then it is: (A) Right-angled triangle (B) Equilateral triangle (C) Isosceles triangle (D) Scalene but not right-angled	1
Q11	If in two similar triangles, the areas are in the ratio 25 : 36, then the ratio of their corresponding sides is: (A) 5 : 6 (B) 25 : 36 (C) 36 : 25 (D) 6 : 5	1
Q12	4. If O is the center of a circle and PT is a tangent to the circle at point T, then ∠OTP is:	1

	A. 30° B. 45° C. 60° D. 90°	
Q13	A tangent is drawn from external point at distance 13 cm from centre of circle of radius 12 cm. Find tangent length. A) 5 cm B) 7 cm C) 10 cm D) 11 cm	1
Q14	Tangent at point P of a circle and radius OP at that point are: A) Equal B) Parallel C) Perpendicular D) None	1
Q15	Which of the following can be the probability of an event? A) -0.04 B) 1.004 C) 18/23 D) 8/7	1
Q16	The area of a sector of angle 90° in a circle of radius 14 cm is a) 77 cm^2 b)154 cm^2 c)462 cm^2 d)616 cm^2	1
Q17	The mode of the data 2, 4, 6, 8, 8, 10, 12 is: a) 6 b) 8 c) 10 d) 12	1
Q18	The median of the data 3, 7, 9, 14, 18, 21, 25 is: a) 12 b) 14 c) 13.5 d) 9	1
Q19	Assertion (A): In a right-angled triangle, the square of the hypotenuse is equal to the sum of the squares of the other two sides. Reason (R): This is the statement of Pythagoras theorem. (A) Both A and R are true, and R is the correct explanation of A. (B) Both A and R are true, but R is not the correct explanation of A. (C) A is true, but R is false. (D) A is false, but R is true.	1
Q20	Assertion (A): The probability of an impossible event is 1. Reason (R): Probability of any event lies between 0 and 1. (A) Both A and R are true, and R is the correct explanation of A. (B) Both A and R are true, but R is not the correct explanation of A.	1

	(C) A is true, but R is false. (D) A is false, but R is true.	
	SECTION -B **(very short answer)** **This section comprises of VSA of 2 marks**	
Q21	(A)Show that the number $2 \times 5 \times 7 \times 11 + 11 \times 13$ is a composite number. OR (B)Check whether 6^n can end with the digit 0 for any natural number n.	2
Q22	Find the zeroes of the following quadratic polynomial and verify the relationship between the zeroes and the coefficients. $t^2 – 15$	2
Q23	Find the roots of the quadratic equation $2x^2 – 7x + 3 = 0$ by applying the quadratic formula.	2
Q24	(A)If sin A=3/4 Calculate cos A and tan A. OR (B) Evaluate: $Sin^2 60° + 2\ tan\ 45° - cos^2 30°$	2
Q25	Prove that the tangents drawn at the ends of a diameter of a circle are parallel.	2
	SECTION – C	
Q26	Prove that $3+2\sqrt{5}$ is irrational number.	3
Q27	Half the perimeter of a rectangular garden, whose length is 4m more than its width , is 36m. Find the dimensions of the garden.	3
Q28	The sum of the 4th and 8th terms of an AP is 24 and the sum of the 6th and 10th terms is 44. Find the first three terms of the AP.	3
Q29	Prove the identity , where the angles are acute angles for which the expressions are defined. $\frac{cosA}{1+sinA} + \frac{1+sinA}{cosA} = 2secA$	3
Q30	Prove that the parallelogram circumscribing a circle is a rhombus.	3

<table>
<tr><td>Q31</td><td>(A)The following table shows the ages of the patients admitted in a hospital during a year:
<table>
<tr><td>Age (in years)</td><td>5 - 15</td><td>15 - 25</td><td>25 - 35</td><td>35 - 45</td><td>45 - 55</td><td>55 - 65</td></tr>
<tr><td>Number of patients</td><td>6</td><td>11</td><td>21</td><td>23</td><td>14</td><td>5</td></tr>
</table>
Find the mean of the given data.
OR
The following table gives the distribution of the life time of 400 neon lamps :
<table>
<tr><th>Life time (in hours)</th><th>Number of lamps</th></tr>
<tr><td>1500 - 2000</td><td>14</td></tr>
<tr><td>2000 - 2500</td><td>56</td></tr>
<tr><td>2500 - 3000</td><td>60</td></tr>
<tr><td>3000 - 3500</td><td>86</td></tr>
<tr><td>3500 - 4000</td><td>74</td></tr>
<tr><td>4000 - 4500</td><td>62</td></tr>
<tr><td>4500 - 5000</td><td>48</td></tr>
</table>
Find the median life time of a lamp.</td><td>3</td></tr>
<tr><td></td><td>SECTION- D
Section D consists of 4 question of 5 marks each.1</td><td></td></tr>
<tr><td>Q32</td><td>Rohan’s mother is 26 years older than him. The product of their ages (in years) 3 years from now will be 360. We would like to find Rohan’s present age.</td><td>5</td></tr>
<tr><td>Q33</td><td>(A)A tree breaks due to storm and the broken part bends so that the top of the tree touches the ground making an angle 30° with it. The distance between the foot of the tree to the point where the top touches the ground is 8 m. Find the height of the tree.
OR
A kite is flying at a height of 60 m above the ground. The string attached to the kite is temporarily tied to a point on the ground. The inclination of the string with the ground is 60°. Find the length of the string, assuming that there is no slack in the string.</td><td>5</td></tr>
<tr><td>Q34</td><td>State and Prove “ Basic Proportionality Theorem”</td><td>5</td></tr>
<tr><td>Q35</td><td>A gulab jamun, contains sugar syrup up to about 30% of its volume. Find approximately how much syrup would be found in 45 gulab jamuns, each shaped like a cylinder with two hemispherical ends with length 5 cm and diameter 2.8 cm.</td><td>5</td></tr>
<tr><td></td><td>SECTION -E
Section E consists of 3 question of 4 marks each.</td><td></td></tr>
<tr><td>Q36</td><td>CASE-STUDY -1
The class X students school in krishnagar have been allotted a rectangular plot of land for their gardening activity. Saplings of Gulmohar are planted on the boundary at a distance of 1</td><td></td></tr>
</table>

	m from each other. There is triangular grassy lawn in the plot as shown in the figure. The students are to sow seeds of flowering plants on the remaining area of the plot.  	
	1. Taking A as origin, find the coordinates of P. (a) (4,6) (b) (6,4) (c) (0,6) (d) (4,0)	1
	2. What will be the coordinates of R, if C is the origin? (a) (8,6) (b) (3,10) (c) (10,3) (d) (0,6)	1
	3. What will be the coordinate of Q, if C is the origin?	2
Q37	**CASE-STUDY-2**	
	A brooch is a small piece of jewellery which has a pin at the back so it can be fastened on a dress, blouse or coat. Designs of some brooch are shown below. Observe them carefully.  Design A: Brooch A is made with silver wire in the form of a circle with diameter 28mm. The wire used for making 4 diameters which divide the circle into 8 equal parts. Design B: Brooch b is made two colours_ Gold and silver. Outer part is made with Gold. The circumference of silver part is 44mm and the gold part is 3mm wide everywhere.	
	1. Refer to Design A . The total length of silver wire required is. a) 180 mm b) 200 mm c) 250 mm d) 280 mm	1
	2. The area of each sector of the brooch is a) 44 mm2 b) 52 mm2	1

	c) 77 mm2 d) 68 mm2	
	3.Refer to Design B A boy is playing with brooch B. He makes revolution with it along its edge. How many complete revolutions must it take to cover 8 πmm ?	2
38	**CASE – STUDY- 3** Rahul and Ravi planned to play Business (board game) in which they were supposed to use two dice. 	
	1. Ravi got first chance to roll the dice. What is the probability that he got the sum of the two numbers appearing on the top face of the dice is 8? (a)1/26 (b)5/36 (c)1/18 (d)0	1
	2. Rahul got next chance. What is the probability that he got the sum of the two numbers appearing on the top face of the dice is 13? (a) 1 (b) 5/36 (c) 1/18 (d) 0	1
	3. Now it was Ravi's turn. He rolled the dice. What is the probability that he got the sum of the two numbers appearing on the top face of the dice is less than or equal to 12 ?	2