PRE- BOARD II -2025 – 26
CLASS – X
SUBJECT – MATHEMATICS

Maximum Marks: 80
Time allowed: Three hours
Answers to this Paper must be written on the paper provided separately.
You will not be allowed to write during first 15 minutes.
This time is to be spent in reading the question paper.
The time given at the head of this Paper is the time allowed for writing the answers.

Attempt ***all*** *questions from* ***Section A*** *and* ***any four*** *questions from* ***Section B.***
All working, including rough work, must be clearly shown and must be done on the same sheet as rest of the answer.
Omission of essential working will result in loss of marks.
The intended marks for questions or parts of questions are given in brackets [ ].
Mathematical tables and graph papers are provided.

SECTION A

NOTE: Attempt ALL questions from this section

Question 1.

Choose the correct option. (Write correct answer with correct option number, do not show solution) [15]

i) A dealer in Sikkim sells goods to a consumer in Sikkim worth ₹ 80,000. If the rate of GST is 12%, the SGST to be paid is:

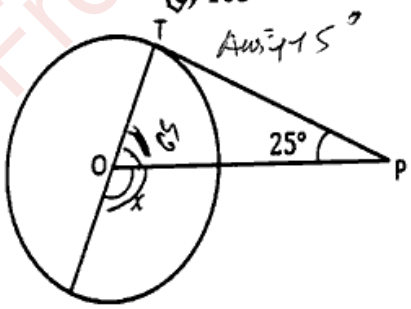
(a)₹9600 **(b)₹ 6400** **(c)₹ 2400** **(d)₹ 4800**

ii) What must be subtracted from the polynomial $x^3 + x^2 - 2x + 1$, so that the result is exactly divisible by $(x - 3)$?

(a) – 31 **(b) – 30** **(c) 30** **(d) 31**

iii) In the adjoining diagram, O is the centre of the circle and PT is a tangent. The value of x is:

(a) 50^0 **(b) 90^0** **(c) 105^0** **(d) 85^0**



iv) The centroid in centre of a triangle is the point which is:

(a) at equal distance from the three sides of the triangle.
(b) the point of intersection of the angular bisectors of the triangle.
(c) the point of intersection of the three medians.
(d) the point of intersection of the three altitudes of the triangle.

(v) If the n^{th} term of an A.P. is given by $a_n = 2n + 1$, then the sum of first n terms of the A.P is

(a) $n(n-2)$ **(b) $n(n+2)$** **(c) $n(n+1)$** **(d) $n(n-1)$**

(vi) 10 cards are marked with the numbers 1 to 10, and then one card is picked up. What is the probability that the card is an odd prime number ?

(a) 0.6 **(b) 0.5** **(c) 0.4** **(d) 0.3**

(vii) If 84 is the nth term of the arithmetic progression 21,28,35,42…,then 'n' is

a) 11 *b) 14* *c) 9* *d) 10*

(viii) The equation of a line whose y intercept = 2 and slope = 3 is $y = 3x - 2$

(a) y = 2x + 3 **(b) x = 2y + 3** **(c) y = 3x + 2** **(d) x = 3y + 2**

(vii) If A = $[3 \quad -2]$ and B = $\begin{bmatrix} -1 & 4 \\ 2 & 0 \end{bmatrix}$

Assertion (A): Product AB of two matrices A and B is possible.

Reason (R): Number of columns of A is equal to number of rows in B.

(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

(x) The value of $\text{cosec}^2\theta + \sec^2\theta$ is equal to :

(a) $\tan^2\theta + \cot^2\theta$ *(b)* $\cot\theta + \tan\theta$ *(c)* $(\cot\theta + \tan\theta)^2$ *(d)* 1

(xi) The value of k if the roots of the equation $x^2 - 2x + p = 0$ are real and equal is:

(a) 1 **(b) −1** **(c) 0** **(d) 2**

(xii) The median of the following observations arranged in ascending order is 64. Find the value of x:

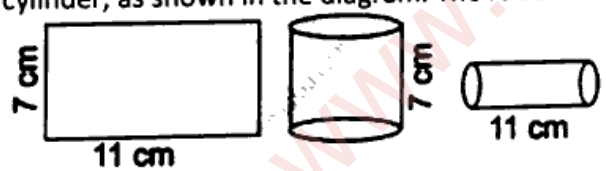
27, 31, 46, 52, x, $x + 4$, 71, 79, 85, 90

(a) 60 **(b) 61** **(c) 62** **(d) 66**

(xiii) Given $x + 2 \leq \frac{x}{3} + 3$ and x is a prime number. The solution set for x is:

(a) ∅ **(b) {0}** **(c) {1}** **(d) {0,1}**

(xiv) A rectangular sheet of paper of size 11 cm × 7 cm is first rotated about the side 11 cm and then about the side 7 cm to form a cylinder, as shown in the diagram. The ratio of their curved surface areas is:



(a) 1:1 **(b) 11:7** **(c) 7:11** **(d) 2:3**

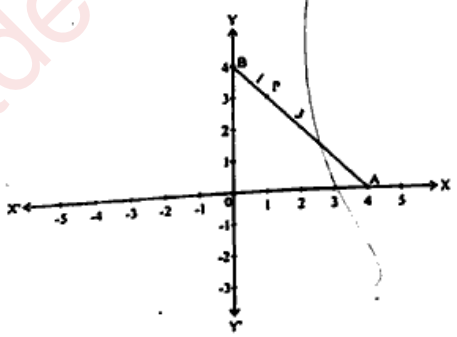
(xv) If $r, 8, 16, q$ are in continued proportion, then the value of $q + r$ is

(a) 26 **(b) 66** **(c) 36** **(d) 48**

Question 2

(a) While factorizing a polynomial, a student finds that $x - 1$ is a factor of $x^3 + x^2 - 4x - 4$. Is the student Correct? Give reason. Also, factorize the given polynomial completely. **[4]**

(b) *A* and *B* are two points on the x-axis and y-axis respectively.



(i) Write the coordinates of A and B.

(ii) P is a point on AB such that AP:PB 3:1 . Using section formula, find coordinates of point P

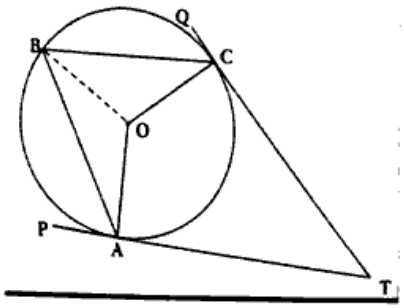
(iii) find coordinates of centroid of triangle OAB.

(iv) find equation of a line passing through P and perpendicular to AB. **[4]**

(c) In the given figure TP and TQ are two tangents to the circle with centre O, touching at A and C respectively. **[4]**

If $\angle BCQ = 55°$ and $\angle BAP = 60°$, find:

(i) $\angle OBA$ and $\angle OBC$ (ii) $\angle AOC$ (iii) $\angle ATC$



Question 3

(a) In an arithmetic progression the fourth and sixth terms are 8 and 14 respectively. Find the:
(i) first term (ii) common difference (iii) sum of first 20 terms. **[4]**

(b) A circus tent is cylindrical to a height of 4 m and conical above it. If its diameter is 105 m and its slant height is 80 m, calculate the total area of canvas required. Also, find the total cost of canvas used at ₹ 15 per meter if the width is 1.5 m. **[4]**

(c) Use graph paper for this question. (Take 2 cm=1 unit along both x and y axis)
Plot the points O(0, 0),A(-4,4), B(-3,0) and C(0,-3)
i. Reflect points A and B on y-axis and name them A' and B' respectively. Write their coordinates.
ii. Name the figure OABCB'A'.
iii. State a point which is invariant under the reflection in the y axis . **[5]**

SECTION B (40 Marks)

*Attempt any **four** questions from this section*

Question 4

(a) A man invests ₹ 4500 in shares of a company which is paying 7.5% dividend. If ₹ 100 shares are available at a discount of 10%, find (i) number of shares (ii) his dividend. **[3]**

(b) Solve the following inequation and write down the solution set. Represent it on the number line. **[3]**

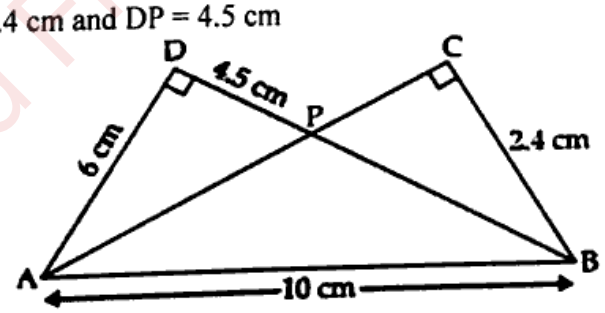
$$-3 + x \leq \frac{8}{3}x + 2 \leq \frac{14}{3} + 2x, x \in R$$

(c) Calculate the mean marks of the distribution by short – cut method. **[4]**

Class interval	50-55	55-60	60-65	65-70	70-75	75-80	80-85	85-90
Frequency	5	20	10	10	9	6	12	8

Question 5

(a) In the given diagram ΔADB and ΔACB are two right angled triangles with $\angle ADB = \angle BCA = 90°$. If AB = 10 cm, AD = 6 cm, BC= 2.4 cm and DP = 4.5 cm **[3]**



i. Prove that ΔAPD ~ ΔBPC
ii. Find the length of BD and PB

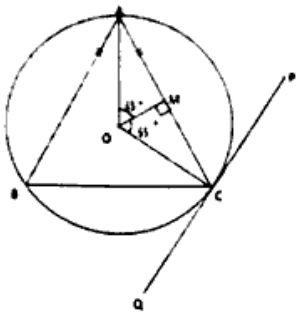
(b) Rekha opened a recurring deposit account for 20 months. The rate of interest is 9% per annum and she receives ₹ 441 as interest at the time of maturity. Find the amount she deposited each month. **[3]**

(c) Prove the following trigonometry identity: $\left(\frac{1-\tan\theta}{1-\cot\theta}\right)^2 + 1 = \sec^2\theta$ **[4]**

Question 6

(a) Find equation of a line passing through the point $(2, -1)$ and parallel to the line $6x + 10y + 7 = 0$ **[3]**

(b) In the given diagram, an isosceles DABC is inscribed in a circle with centre O. PQ is a tangent to the circle at C. OM is perpendicular to chord AC and ∠COM = 65°. Find: (i) ∠ABC (ii) ∠BAC (iii) ∠BCQ **[3]**



(c)The following bill shows the GST rate and the marked price of articles:

Rajdhani Departmental Store

	Item	Marked Price	Discount	Rate of GST
(a)	Dry fruits (1 kg)	₹1200	₹100	12%
(b)	Packed Wheat flour (5kg)	₹286	Nil	5%
(c)	Bakery products	₹500	10%	12%

Find the total amount to be paid (including GST) for the above bill. [4]

Question 7

(a) The marks obtained by 120 students in an English test are given below.

Marks	0-10	10-20	20-30	30-40	40-50	50-60	60-70	70-80	80-90	90-100
No of students	5	9	16	22	26	18	11	6	4	3

Draw the ogive and hence estimate:

(i) the median marks

(ii) the no of students who did not pass the test if the pass percentage was 50

(iii) the upper quartile marks. [6]

(b) From the top of a tower 100 m high a man observes the angle of depression of two ships A and B, on opposite sides of the tower as 45° and 38° respectively. If the foot of the tower and the ships are in the same horizontal line find the distance between two ships A and B to the nearest metre. [4]

Question 8

(a) Cards marked with numbers 1, 2, 3.... 20 are well shuffled and a card is drawn at random. What is the probability that the number on the card is: (i) A prime number, (ii) A number divisible by 3, (iii)A perfect square? [3]

(b) Using properties of proportion , find x: $\frac{\sqrt{5x}+\sqrt{2x-6}}{\sqrt{5x}-\sqrt{2x-6}} = 4$ [3]

(c) Using ruler and compass construct a triangle ABC in which AB = 6 cm, ∠BAC=120° and AC=5cm . Construct a circle passing through A, B and C. Measure and write down the radius of the circle. [4]

Question 9

(a) In a GP the first term is 24 and fifth term is 8. Find the 9th term of the G.P. [3]

(b) Solve the following quadratic equation and give the answer correct to two decimal places: $4x^2 - 5x - 3 = 0$. [3]

(c)Given $\begin{bmatrix} 4 & 2 \\ 1 & -1 \end{bmatrix}$. M = 6 I. State the order of matrix M. Also find the matrix M. [4]

Question 10

(a) A solid sphere of radius 15 cm is melted and recast into solid right circular cones of radius 2.5 cm and height 8 cm. Calculate the number of cones recast. [3]

(b) Solve for x and y: $[x+y \quad x-4]\begin{bmatrix} -1 & -2 \\ 2 & 2 \end{bmatrix} = [-7 \quad -11]$ [3]

(c) A shopkeeper purchases a certain number of books for ₹ 960. If the cost per book was ₹ 8 less, the number of books that can be purchased for ₹ 960 would be 4 more. Write an equation, taking the original cost of each book to be ₹x, and solve it. [4]