Series P/PB2/1

SET 1

CLASS X PRE-BOARD EXAMINATION – 2025-26

Q.P. Code: 241/2/1

Roll No. | | | | | | | | |

Candidate must write the Q.P. Code on the title page of the answer-book.

- Please check that this question paper contains **8** printed pages.
- Please check that this question paper contains **38** questions.
- Q.P. Code given on the right hand side of the question paper should be written on the title page of the answer-book by the candidate.
- **Please write down the serial number of the question in the answer-book before attempting it.**
- 15 minute time has been allotted to read this question paper. The students will read the question paper only and will not write any answer on the answer-book during this period.

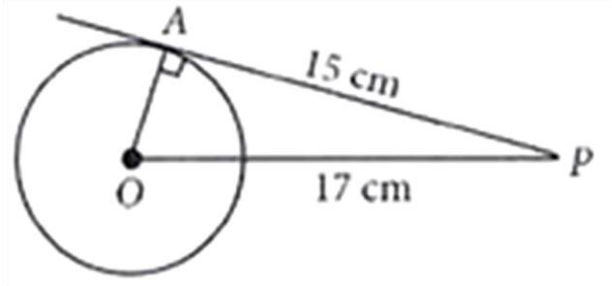
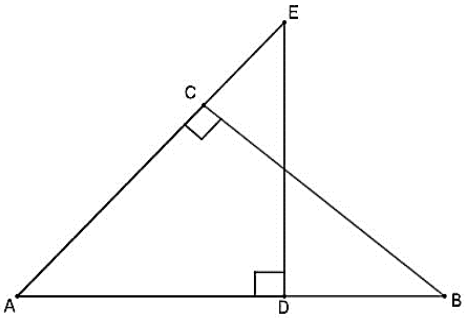
MATHEMATICS (BASIC)

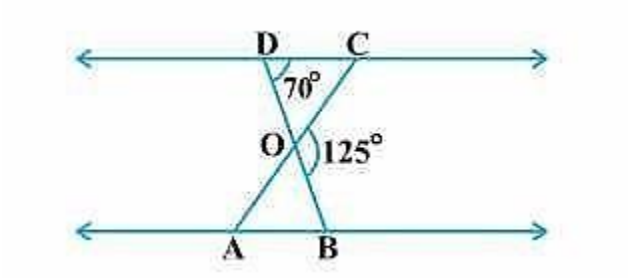
Time allowed : 3 hours *Maximum Marks : 80*

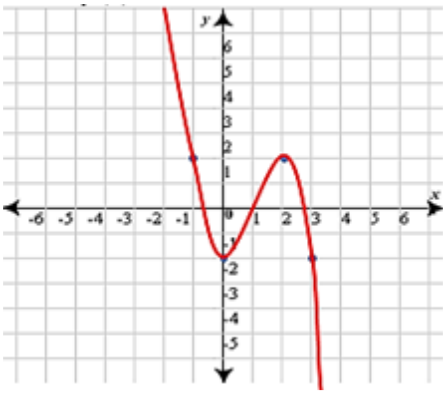
General Instructions:

Read the following instructions very carefully and strictly follow them:

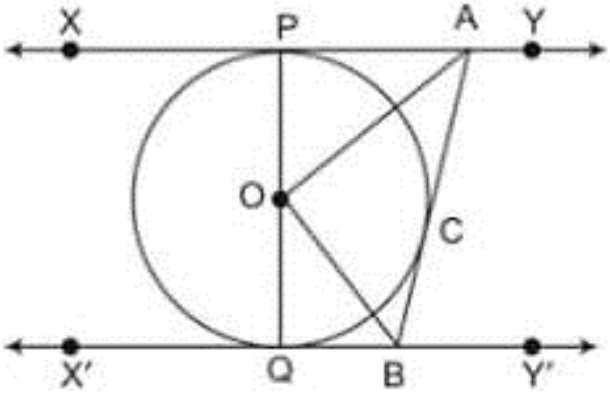
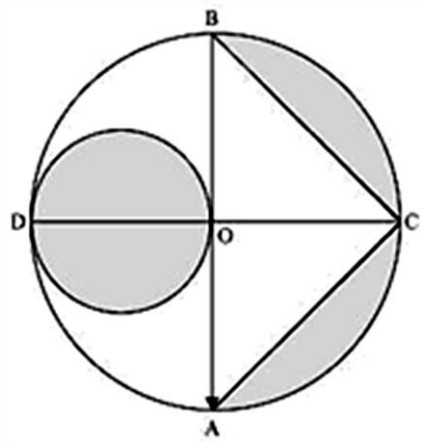
1. This question paper contains **38** questions. **All** questions are **compulsory**.
2. This Question Paper is divided into **5** Sections **A, B, C, D** and **E**.
3. In **Section A**, Questions no. **1 to 18** are multiple choice questions (MCQs) and questions no. **19 and 20** are Assertion- Reason based questions of **1** mark each.
4. In **Section B**, Questions no. **21 to 25** are very short answer (VSA) type questions, carrying **2** marks each.
5. In **Section C,** Questions no. **26 to 31** are short answer (SA) type questions, carrying **3** marks each.
6. In **Section D**, Questions no. **32 to 35** are long answer (LA) type questions, carrying **5** marks each.
7. In **Section E**, Questions no. **36 to 38** are case-study based questions carrying **4** marks each. Internal choice is provided in **2** marks question in each case-study.
8. There is no overall choice. However, an internal choice is provided in **2** Question of Section **B**, 2 Questions of Section **C** and 2 Questions of Section **D** and 3 questions of 2 marks in Section **E** 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.
10. Take $\pi = 22/7$ wherever required if not stated.
11. Use of calculators is **NOT allowed**.

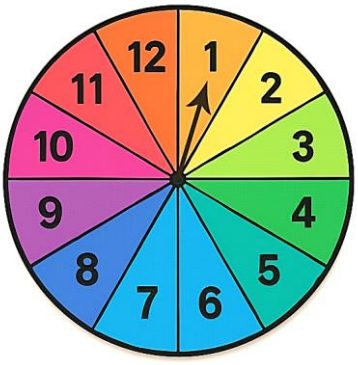
Qn No	Questions
	SECTION A **Section A consists of 20 questions of 1 mark each**
1)	If a = $2^3 X 3$, b = 2 X 3 X 5 , c = $3^n X 5$ and LCM(a ,b , c) = 2^3 X $3^2 X5$ then n= (A) 3 (B) 2 (C) 1 (D) 4
2)	The pair of linear equations $2x$ + y - 7 = 0 and $6x + 5y$ - 11 = 0 has (A) Unique solution (B) No solution (C) non zero solution (D) Infinitely many solution
3)	What will be the value of k if the Quadratic equation $2x^2 + kx + 3 = 0$ have equal roots? (A) $\pm\sqrt{6}$ (B) 24 (C) $\pm 2\sqrt{6}$ (D) $\pm 4\sqrt{6}$
4)	The distance between the points (0, 0) and (a – b, a + b) is (A) $2\sqrt{ab}$ (B) $\sqrt{2a^2 + ab}$ (C) $2\sqrt{a^2 + b^2}$ (D) $\sqrt{2a^2 + 2b^2}$
5)	In the adjoining figure, diameter of the circle is  (A) 7cm (B) 16cm (C) 8cm (D) 10cm
6)	A circle touches all four sides of a quadrilateral PQRS. If PQ = 11cm ,QR =12cm And PS = 8cm then length of RS is (A) 7 cm (B) 15cm (C) 9 cm (D) 11
7)	Find the value of 2 $\tan^2 45^0$ -3 $\cos^2 30^0$ +4 $\sin^2 60^0$ (A) 11 (B) 11/4 (C) 17/4 (D) 1
8)	In the given figure, ΔBAC is similar to  A) ΔAED (B) ΔEAD (C) ΔACB (D) ΔBC

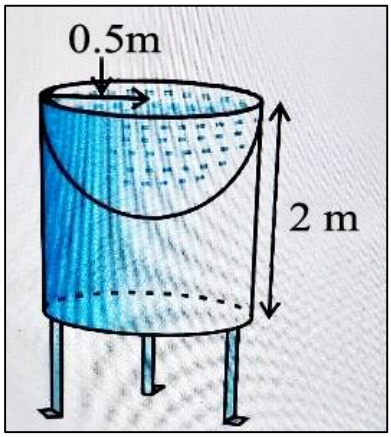
Qn No	Questions
9)	If n is a natural number then $9^{2n} - 4^{2n}$ is always divisible by (A) 9 ,4 (B) 3 ,2 (C) 5 , 13 (D) 2 , 3
10)	If the n^{th} term of an A.P is 7n - 4 then the common difference is (A) 4 (B) 7 (C) 6 (D) 6
11)	In the following figure, ΔODC ~ΔOBA, ∠BOC = 125^0 and ∠CDO = 70^0. Find ∠DCO  (A) 60^0 (B) 70^0 (C) 55^0 (D) 65^0
12)	The distance between two parallel tangents to a circle of radius 7cm is (A) 7cm (B) 12cm (C) 10cm (D) 14cm
13)	If tan θ= $\sqrt{3}$ then value of sinθ + cosθ is (A) 1 (B) $\frac{\sqrt{3}}{2}$ (C) $\frac{\sqrt{3}+1}{2}$ (D) $\sqrt{2}$
14)	2 cubes, each of volume 216 are joined end to end. Find the total surface area of the resulting cuboid (A) 360cm^2 (B) 432cm^2 (C) 216 cm^2 (D) 320cm^2
15)	A bag contains 10 red marbles 6 blue marbles and 8 Black marbles. One marble is drawn out randomly, then the probability of not getting a black marble is (A)2/3 (B) 1/3 (C) 0 (D) ¼
16)	16) I f α and β are the roots of quadratic equation $3x^2 - 4x + 1 = 0$ then $\alpha^2 + \beta^2 =$ (A) $\frac{10}{3}$ (B) $\frac{10}{9}$ (C) $\frac{9}{10}$ (D) $\frac{16}{9}$
17)	If the difference of mode and median of a data is 24 then the difference of median and mean is (A) 18 (B) 16 (C) 12 (D) 20

Qn No	Questions
18)	In figure, the graph of a polynomial p(x) is shown. The number of zeroes of p(x) is  (A) 1 (B) 2 (C) 3 (D) 4
	DIRECTION: In the question number 19 and 20, a statement of **Assertion (A)** is followed by a statement of **Reason (R)**. Choose the correct option (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 and 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): The sum of first 100 positive integers is 5550. Reason(R): The sum of first n natural number is n(n+1)/2
20)	Assertion (A): $(6+\sqrt{2})$ is an irrational number. Reason(R): Product of two irrational numbers is always irrational.
	SECTION B **Section B consists of 5 questions of 2 marks each.**
21)	Find the point on y-axis which is equidistant from the points(-5, –2) and (3, 2). **OR** Find the distance between A (cos 30 , - sin60) and B (sin30 ,cos60).
22)	In Δ ABC , D and E are the points on sides AB and AC respectively .such that DE ‖ BC . If AD = x , DB = x - 2 ,AE = x + 2 ,EC = x- 1 then find the value of x .
23)	Find the eleventh term from the last term of the A.P, 27 , 23 , 19 ,…..-65 **OR** The 5^{th} term of an A.P is 26 and 10^{th} term is 51.Determine the 15^{th} term of A.P

<table>
<tr><th>Qn No</th><th>Questions</th></tr>
<tr><td>24)</td><td>If $4\tan\theta = 3$ find the value of $\frac{4\sin\theta - \cos\theta}{4\sin\theta + \cos\theta}$</td></tr>
<tr><td>25)</td><td>The daily wage of 20 labourers of a company are given below. Find the mean wage
<table>
<tr><td>Income per day</td><td>200</td><td>250</td><td>260</td><td>300</td><td>320</td><td>350</td></tr>
<tr><td>No. of families</td><td>1</td><td>3</td><td>4</td><td>8</td><td>2</td><td>2</td></tr>
</table></td></tr>
<tr><td></td><td>SECTION C
Section C consists of 6 questions of 3 marks each.</td></tr>
<tr><td>26)</td><td>Prove that $\sqrt{5}$ is an irrational number.</td></tr>
<tr><td>27)</td><td>Find the ratio in which the y-axis divides the line segment joining the points (6, −4) and (−2 ,-7). Also find the point of intersection
OR
If the points A(6,1), B(8,2), C(9,4) and D(p,3) are the vertices of a parallelogram, taken in order, find the value of p</td></tr>
<tr><td>28)</td><td>Prove that: (1+tan A - sec A) (1+tan A + sec A) = 2 tan A</td></tr>
<tr><td>29)</td><td>Determine the missing frequency x from the following data ,when the mode is 67
<table>
<tr><td>Class</td><td>40-50</td><td>50- -60</td><td>60- 70</td><td>70- 80</td><td>80 -90</td></tr>
<tr><td>Frequency</td><td>5</td><td>x</td><td>15</td><td>12</td><td>7</td></tr>
</table></td></tr>
<tr><td>30)</td><td>Prove that the length of tangents drawn from an external point to a circle are equal
OR
A circle touches the sides of a quadrilateral ABCD at P , Q , R ,S respectively Show that the Angle subtended at the centre by a pair of opposite sides are supplementary</td></tr>
<tr><td>31)</td><td>Two friends Ishan and Shankar are planning to buy notebooks and pens for an NGO. Ishan buys 4 notebooks and 5 pens for Rs.60/ .Shankar buys 2 notebooks and 3 pens for Rs. 32/
(1) Represent the situation algebraically
(2) Find the cost of one notebook and one pen using graphical method</td></tr>
<tr><td></td><td>SECTION D
Section D consists of 4 questions of 5 marks each.</td></tr>
<tr><td>32)</td><td>A train takes 2 hours less for a journey of 300 km, if its speed is increased by 5km/hr from its usual speed .Find the usual speed of the train.
OR
Amita buys some books for ₹1920. If she had bought 4 more books for the same amount each book would cost her ₹ 24 less. How many books did she buy? What was the initial price of one book?</td></tr>
</table>

Qn No	Questions
33)	XY and X'Y' are two parallel tangents to a circle with centre O and another tangent AB with the point of contact C intersecting XY at A and X'Y' at B. Prove that ∠ AOB = 90°. 
34)	In the given figure, AB and CD are two diameters of a circle (with centre O) perpendicular to each other and OD is the diameter of the smaller circle. If OD = 14 cm, find the area of the shaded region. 
35)	From a point on the ground, the angles of elevation of the bottom and the top of a transmission tower fixed at the top of a 15 m high building are 45° and 60° respectively. Find the height of the tower. **OR** Two poles of equal heights are standing opposite each other on either side of the road, which is 120 m wide. From a point between them on the road, the angles of elevation of the top of the poles are 60° and 30°, respectively. Find the height of the poles and the distances of the point from the poles.

Qn No	Questions
	SECTION E **Section E consists of 3 questions of 4 marks each.**
36)	One day Rahul visited park along with his friend. There he saw a game of chance that consists of spinning an arrow (as shown in the figure) that comes to rest pointing at one of the numbers 1,2,3,4,5,6,7,8 . . . . 12 and these are equally likely outcomes  1) What is the probability that arrow will point at 3? 2) What is the Probability that arrow will point at a number divisible by 4 3) What is the probability that arrow will point at a prime number greater than 1 but less than 12? **OR** What is the probability that arrow will point at a composite number.
37)	An auditorium was booked for a marriage reception and the seats are arranged in a particular manner, the number of rows are equal to the number of seats in each row. When the number of rows were doubled and the number of seats in each row was reduced by 10 then the total number of seats increased by 300.  (1) If x is taken as the number of rows in original arrangement, which quadratic equation describe the present arrangement? (2) How many number of rows are there in the original arrangement?

Qn No	Questions
	(3) How many seats are there in the auditorium in original arrangement **OR** (3) How many seats are there in the Auditorium after the arrangement?
38)	Rajesh wants to make a bird bath for his garden in the shape of a cylinder of height 2m and radius 0.5 m with a hemispherical depression at one end, stands on three cylindrical pillars of radius 10cm and height 1m as shown in the figure  1) Find the curved surface area of hemispherical depression. 2) Find the volume of the hemispherical depression. 3) Find the volume of the cylindrical vessel. **OR** Find the total surface area of the cylindrical vessel.