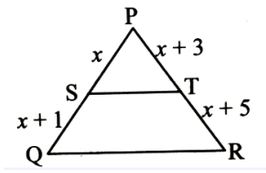
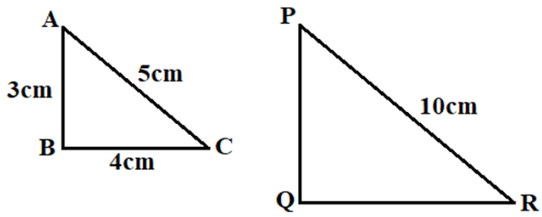
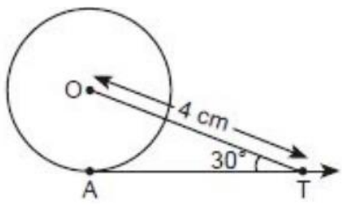
SINDHI HIGH SCHOOL, BENGALURU
III PRE BOARD EXAMINATION [2025-26]
SUBJECT: MATHEMATICS BASIC (241)
SET 2

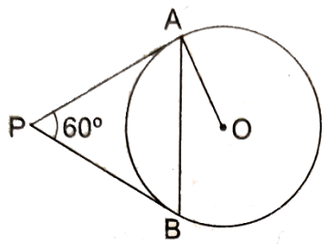
Class: X **Max Marks: 80**
Date:16/01/2026 **Reading Time:8.30AM to 8:45AM**
No of Sides: 06 **Writing Time: 8:45AM to11:45AM**

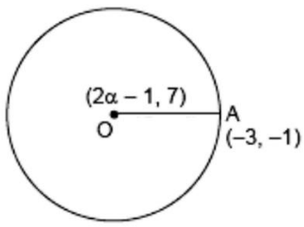
GENERAL INSTRUCTIONS:

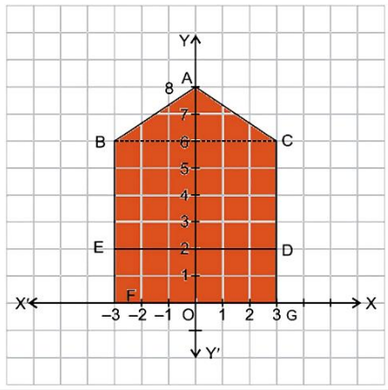
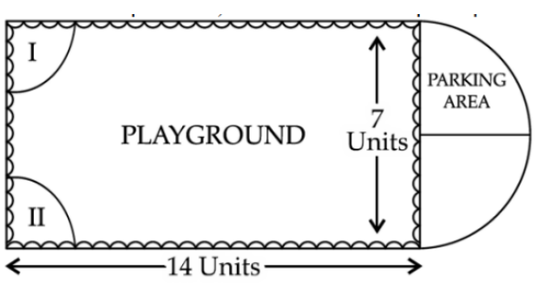
- **This Question Paper has 5 Sections A, B, C, D and E.**
- **Section A has 20 MCQs carrying 1 mark each**
- **Section B has 5 questions carrying 02 marks each**
- **Section C has 6 questions carrying 03 marks each.**
- **Section D has 4 questions carrying 05 marks each.**
- **Section E has 3 case based integrated units of assessment (04 marks each) with sub- parts of the values of 1, 1 and 2 marks each respectively.**
- **All Questions are compulsory. However, an internal choice in 2 Qs of 5 marks, 2 Qs of 3 marks and 2 Questions of 2 marks has been provided. An internal choice has been provided in the 2marks questions of Section E.**
- **Draw neat figures wherever required. Take π =22/7 wherever required if not stated.**

	Section A	
	Section A consists of 20questions of 1 mark each.	
1	If product of two numbers is 3691 and their LCM is 3691, then their HCF is (a) 7 (b) 2 (c) 3 (d) 1	**1**
2	Graphically, the pair of linear equations $6x - 3y + 10 = 0$ and $2x - y + 9 = 0$ represent two lines which are (a) Intersecting exactly at one point (b) Intersecting at exactly two points (c) coincident (d) parallel	**1**
3	The zeros of the polynomial $x^2 - x - 6$ are (a) 3 , 2 (b) – 3 , 2 (c) 3, - 2 (d) – 3, - 2	**1**
4	The value of D for the quadratic equation $x^2 - 4x - 4 = 0$ is? (a) 0 (b) 4 (c) 8 (d) 16	**1**
5	The value of x for which $(x - 3)$, $(2x + 1)$ and $(4x + 7)$ are the three consecutive terms of an AP is (a) 2 (b) -2 (c) 4 (d) 3	**1**
6	The 9^{th} term from the end (towards the first term) of the AP: 5, 9, 13, ……. 185 is (a) 149 (b) 153 (c) 157 (d) 161	**1**

7	If the points A (2, 3), B (4, y) and C (6, −3) are collinear then the value of y is (a) 0 (b) 1 (c) 2 (d) 3	**1**
8	The points which are equidistant from the origin are (a) (- 4, 2) and (5, -1) (b) (4, 2) and (- 4, - 2) (c) (6, 0) and (5, 1) (d) (−4, 2) and (0, 6	**1**
9	**In** ΔPQR**, if ST** ‖ **QR,** then the value of x is  (a) 3 (b) 2 (c) 1 (d) 4	**1**
10	If ΔABC~ΔPQR, then perimeter of the triangle PQR (in cm) is  (a) 12 (b) 24 (c) 18 (d) 20	**1**
11	In given figure, AT is a tangent to the circle with centre O such that OT = 4 cm and ∠OTA = 30°. Then AT is equal to (a) 4 cm (b) 2 cm (c) 2√3 cm (d) 4√3 cm  	**1**
12	If sin A = cos A , then the value of A is (a) 90° (b) 30° (c) 45° (d) 60°	**1**
13	For the following distribution the modal class is **Marks** / **Number of students** Below 10 — 3 Below 20 — 12 Below 30 — 27 Below 40 — 57 Below 50 — 75 Below 60 — 80 (a) 10 – 20 (b) 20 – 30 (c) 30 – 40 (d) 40 - 50	**1**
14	The mean and median of a distribution are 14 and 15, respectively. The value of the mode is: (a) 16 (b) 17 (c) 13 (d) 18	**1**

15	From an external point P, the length of tangent to a circle is 8 cm and the distance of P from the centre of circle is 10 cm. The radius of circle (in cm) is (a) 4 (b) 6 (c) 5 (d) 7	**1**
16	In the given figure, PA and PB are the tangents to the circle with centre O. If ∠APB = 60°, then the measure of ∠OAB is equal to (a) 30° (b) 60° (c) 90° (d) 15° 	**1**
17	The formula for the length of an arc of a sector of a circle is (a) $\left(\frac{\theta}{360}\right) 2\pi r$ (b) πr^2 (c) $\left(\frac{\theta}{360}\right) \pi r^2$ (d) $\left(\frac{\theta}{360}\right) \pi r$	**1**
18	Which of the following cannot be the probability of an event? (a) $\frac{2}{3}$ (b) -1.5 (c) 20 % (d) 0.7	
	Each of the following questions contains two statements i.e., ASSERTION and REASON, and has following four choices. Only one of which is the correct answer. (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)**: If two triangles are similar then the ratio of their corresponding sides is equal. **REASON (R)**: In similar triangles, corresponding angles are equal.	**1**
20	**ASSERTION (A)**: The probability of drawing a red queen from a deck of cards is $\frac{1}{13}$ **REASON (R)**: There are two red queens in a standard deck of 52 cards.	**1**
	SECTION-B	
	Section B consists of 5 questions of 2 marks each	
21	**(A)** Find the HCF and LCM of 72 and 120 using prime factorization **OR** (B) Find the smallest 4 digit number which is divisible by 18, 24 and 32.	**2**

22	The centre of a circle is $(2\alpha - 1, 7)$ and it passes through the point $(-3, -1)$. If the diameter of the circle is 20 units, then find the value of α.  	**2**
23	Find a quadratic polynomial whose zeroes are -9 and $-\frac{1}{9}$.	**2**
24	Find the value of 'k' for which the quadratic equation $2kx^2 - 40x + 25 = 0$ has real and equal roots.	**2**
25	(A) Evaluate: $2\tan^2 45° + \cos^2 30° - \sin^2 60°$ **OR** (B) If $3 \cot A = 4$, then find $\cos^2 A - \sin^2 A$	**2**
	SECTION-C	
	Section C consists of 6 questions of 3 marks each	
26	Prove that $\sqrt{7}$ is irrational	**3**
27	**(A)** The table below shows the salaries of 280 persons: **Salary (in thousand Rs.)** | 5 - 10 | 10 - 15 | 15 - 20 | 20 - 25 | 25- 30 | 30 - 35 | 35 - 40 | 40 - 45 | 45 - 50 **No. of persons** | 49 | 133 | 63 | 15 | 6 | 7 | 4 | 2 | 1 Find the median salary of the given data. **OR** **(B)** The mode of the following series is 36. Find the missing **frequency in it.** **CLASS** | 0 - 10 | 10 - 20 | 20 - 30 | 30 - 40 | 40 - 50 | 50 - 60 | 60 - 70 **FREQUENCY** | 8 | 10 | X | 16 | 12 | 6 | 7	**3**
28	Prove that the parallelogram circumscribing a circle is a rhombus.	**3**
29	**(A)** 2 years ago, a father was 5 times as old as his son. 8 years from now, the father's age will be 3 times the son's age. Find their present ages. **OR** **(B)** Solve for x and y, **graphically**: $2x + y = 23$; $4x - y = 19$	**3**
30	Prove that $\frac{\sin\theta - \cos\theta + 1}{\sin\theta + \cos\theta - 1} = \sec\theta + \tan\theta$	**3**
31	Two AP's have the same common difference. The first term of one of these is 3 and that of the other is 8. What is the difference between their 30^{th} terms?	**3**

	SECTION-D	
	Section D consists of 4 questions of 5 marks each	
32	Prove that a line drawn parallel to one side of a triangle intersecting other two sides in distinct points, divides the other two sides in the same ratio.	**5**
33	**(A)** In a class test, the sum of Arun's marks in Hindi and English is 30. When he got 2 marks more in Hindi and 3 marks less in English, the product of the marks would have been 210. Find his marks in the two subjects. **OR** **(B)** A train travels 360km at a uniform speed. If the speed had been 5 km/h more it would have taken 1 hour less for the same journey. Find the speed of the train.	**5**
34	**(A)** A pole of 5m is fixed on the top of a tower. The angle of elevation of the top of pole as observed from a point A on the ground is 60^o and angle of depression of point A from top of the tower is 45^o. Find the height of the tower. (Take $\sqrt{3} = 1.732$). **OR** **(B)** An airplane when flying at a height of 3125 m from the ground passes vertically below another plane at an instant when the angles of elevation of the two planes from the same point on the ground are 30o and 60o respectively. Find the distance between the two planes at that instant.	**5**
35	A tent is in the shape of a cylinder surmounted by a conical top. If the height and diameter of the cylindrical part are 2.1 m and 4 m respectively, and the slant height of the top is 2.8 m, find the area of the canvas used for making the tent. Also, find the cost of the canvas of the tent at the rate of ` 500 per m^2.	**5**
	SECTION-E	
	Section E consists of 3 case study based questions.	
36	Aditya asked Carpenter to make front door of his guest house. The Carpenter suggested him a design which is plotted on a graph as shown in the below figure: Based on the figure, answer the following questions. i) What is the length of the line segment AB? ii) Compare the length AB and AC. iii) **(A)** Find the coordinates of the mid-point of BE. **OR** **(B)** y axis divides BD in what ratio? 	**4**
37	Governing council of a local public development authority of Dehradun decided to build an adventurous playground on the top of a hill, which will have adequate space for parking 	**4**

	After survey, it was decided to build rectangular playground, with a semi-circular area allotted for parking at one end of the playground. The length and breadth of the rectangular playground are 14 units and 7 units, respectively. There are two quadrants of radius 2 units on one side for special seats. **Based on the above information, answer the following questions:** (i) What is the total perimeter of the parking area? (ii) Find the cost of fencing the playground and parking area at the rate of Rs 2 per unit. (iii) **(A)** What is the total area of parking and the two quadrants? **OR** **(B)** What is the ratio of area of playground to the area of parking area?	
38	Sunny goes to a store to purchase juice cartons for his shop. The store has 80 cartons of lychee juice, 90 cartons of pineapple juice, 38 cartons of mango juice and 42 cartons of banana juice. Sunny chooses a carton at random.  **Based on the above information solve the following questions** (i) Find the probability that the selected carton is of pineapple juice. (ii) What is the probability that the selected carton is of banana juice? (iii) **(A)** Sunny buys 4 cartons of pineapple juice, 3 cartons of lychee juice and 3 cartons of banana juice A customer comes to Sunny's shop and picks a tetra pack of juice at random. Find the probability that the customer picks a banana juice if each carton has 10 tetra packs of juice **OR** **(B)** If the storekeeper bought 14 more cartons of pineapple juice after Sunny's visit, then find the probability of selecting a tetra pack of pineapple juice from the store.	**4**

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