INDIAN SCHOOL AL WADI AL KABIR

SECOND REHEARSAL EXAMINATION

MATHEMATICS (STANDARD)–Code No. 041

CLASS-X-(2025-26)

SET: 1

Time allowed: 3 Hrs.

Date:28 - 01 - 2026 **Maximum Marks: 80**

General Instructions:

Read the following instructions very carefully and follow them:

1. This Question Paper has 5 Sections A - E.
2. Section **A** has 20 Multiple Choice Questions (MCQs) carrying 1 mark each.
3. Section **B** has 5 questions carrying 02 marks each.
4. Section **C** has 6 questions carrying 03 marks each.
5. Section **D** has 4 questions carrying 05 marks each.
6. 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.
7. 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 2 marks questions of Section E.
8. Draw neat figures wherever required. Take $\pi = \frac{22}{7}$, wherever required if not stated.

(Section A)
Section A consists of 20 questions of 1 mark each.

Q. No.	Questions	Marks
1.	The pair of linear equations $y = 0$ and $y = -5$ has: (A) unique solutions (B) two solutions (C) no solution (D) infinite number of solutions	1
2.	If α and β are the zeroes of the polynomial $p(x) = x^2 - ax - b$, then the value of $(\alpha + \beta + \alpha\beta)$ is equal to: (A) $a - b$ (B) $-a - b$ (C) $a + b$ (D) $-a + b$	1
3.	PQ is a diameter of a circle with centre $O(2, -4)$. If the coordinates of the point P are $(-4, 5)$, then the coordinates of the point Q will be: (A) $(-3, 4.5)$ (B) $(-1, 0.5)$ (C) $(4, -5)$ (D) $(8, -13)$	1
4.	The quadratic equations which has real and equal roots is: (A) $(x + 1)^2 = 2x + 1$ (B) $x^2 + x = 0$ (C) $x^2 - 4 = 0$ (D) $x^2 + x + 1 = 0$	1

5. If the zeroes of the polynomial $ax^2 + bx + \frac{2a}{b}$ are reciprocal of each other, then the value of b is: 1

(A) $\frac{1}{2}$ (B) 2 (C) $\frac{-1}{2}$ (D) -2

6. If the product of two co-prime numbers is 553, then their HCF is: 1

(A)79 (B) 553 (C) 7 (D) 1

7. The numerical value of the area of a circle is equal to that of the perimeter of a semi-circular disc, both having equal radius. The radius is: 1

(A) 1 unit (B) 2 units (C) $\frac{\pi+2}{\pi}$ (D) $\frac{2\pi+2}{\pi}$

8. If θ is an acute angle and 7 + 4 sinθ = 9, then the value of θ is: 1

(A) 90^0 (B) 30^0 (C) 45^0 (D) 60^0

9. If a sector of a circle has an area of 40π sq. units and a central angle of 72^0, the radius of the circle is: 1

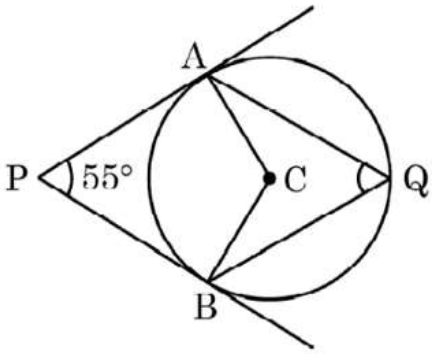
(A) 200 units (B)100 units (C) 10 units (D) $10\sqrt{2}$ units

10. If θ is an acute angle of a right-angled triangle, then which of the following equation is not true? 1

(A) sin θ cot θ = cos θ (B) cos θ tan θ = sin θ

(C) $cosec^2\theta - cot^2\theta = 1$ (D) $tan^2\theta - sec^2\theta = 1$

11. In the given figure, PA and PB are tangents from external point P to a circle with centre C and Q is any point on the circle. Then the measure of $\angle$AQB is: 1



(A) $62\frac{1}{2}^0$ (B) 125° (C) 55° (D) 90°

12. The curved surface area of a cone having height 24 cm and radius 7 cm, is: 1

(A) 528 cm^2 (B) 1056 cm^2 (C) 550 cm^2 (D) 500 cm^2

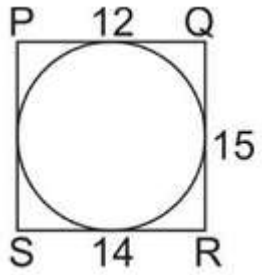
13. Cards numbered 10, 11, 12, ..., 30 are kept in a box and shuffled thoroughly. Rohit draws a card at random from the box. The probability that the number on the card is a multiple of 4 or 5 is: 1

(A) $\frac{9}{20}$ (B) $\frac{9}{21}$ (C) $\frac{10}{20}$ (D) $\frac{10}{21}$

14. Point P divides the line segment joining the points $A(4,-5)$ and $B(1,2)$ in the ratio 5:2. Coordinates of point P are: 1

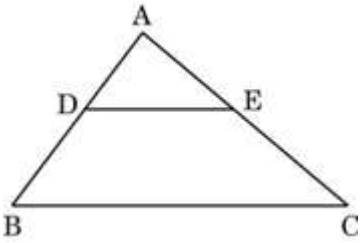
(A) $\left(\frac{5}{2},\frac{-3}{2}\right)$ (B) $\left(\frac{11}{7},0\right)$ (C) $\left(\frac{13}{7},0\right)$ (D) $\left(0,\frac{13}{7}\right)$

15. A quadrilateral PQRS is drawn to circumscribe a circle. If PQ = 12 cm, QR = 15 cm and RS = 14 cm, then the length of SP is: 1



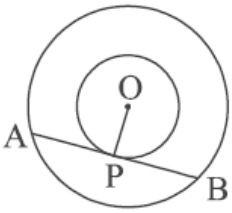
(A) 15 cm (B) 14 cm (C) 12 cm (D) 11 cm

16. In $\Delta ABC,\ DE \parallel BC$ (as shown in the figure). If AD = 4 cm, AB = 9 cm and AC = 13.5 cm, then the length of EC is: 1



(A) 6 cm (B) 7.5 cm (C) 9 cm (D) 5.7 cm

17. In the adjoining figure, AB is the chord of the larger circle touching the smaller circle. The centre of both the circles is O. If AB = 2r and OP = r, then the radius of the larger circle is: 1



(A) 2 r (B) 3 r (C) $2\sqrt{2}$ r (D) $\sqrt{2}$ r

18. $\left[\frac{3}{4}tan^2 30^0 - sec^2 45^0 + sin^2 60^0\right]$ is equal to 1

(A) -1 (B) $\frac{5}{6}$ (C) $\frac{-3}{2}$ (D) $\frac{1}{6}$

Questions number **19** and **20** are Assertion and Reason based questions carrying 1 mark each. Two statements are given, one labelled as Assertion (A) and the other is labelled as Reason (R). Select the correct answer to these questions from the codes (a), (b), (c) and (d) as given below.

(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): Degree of a zero polynomial is not defined. 1
Reason (R) : Degree of a non-zero constant polynomial is 0.

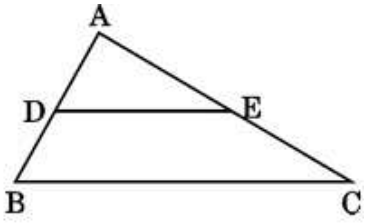
20. Assertion(A): For $0^0 < \theta \leq 90^0$, cosec θ − cot θ and cosec θ + cot θ are reciprocal of each other. 1
Reason(R): $cosec^2\,\theta - cot^2\,\theta = 1$

(Section – B)

Section B consists of 5 questions of 2 marks each.

21. If $\sin\alpha = \frac{1}{\sqrt{2}}$ and $\cot\beta = \sqrt{3}$, then find the value of cosec α + cosec β. 2

22. In a ΔABC, D and E are points on the sides AB and AC respectively such that BD = CE. If $\angle B = \angle C$, then show that DE ∥ BC. 2



23. (a)The first term of an A.P. is 5, the last term is 45 and the sum of all the terms is 400. Find the number of terms and the common difference of the A.P. 2

OR

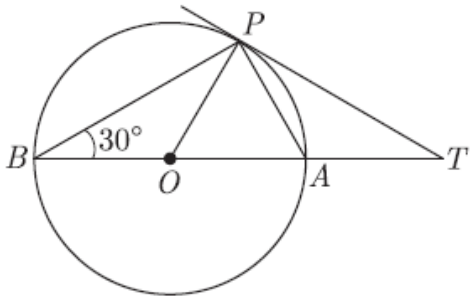
(b) If the sum of first n terms of an A.P. is given by $S_n = \frac{n}{2}(2n + 8)$. Then find its first term and common difference.

24. (a)With vertices A, B and C of ΔABC as centres, arcs are drawn with radii 14 cm and the three portions of the triangle so obtained are removed. Find the total area removed from the triangle. 2

OR

(b)The perimeter of a sector of a circle of radius 5.2 cm is 16.4 cm. Find the area of the sector.

25. In the given figure, *BOA* is a diameter of a circle and the tangent at a point *P* meets *BA* when produced at *T*. If $\angle PBO = 30^o$, what is the measure of $\angle PTA$? 2



(Section – C)

Section C consists of 6 questions of 3 marks each.

26. One card is drawn from a well shuffled deck of 52 cards. Find the probability of getting 3
(i) Non face card (ii) Black king or a Red queen (iii) Spade.

27. Prove that $\sqrt{5}$ is an irrational number. 3

28. (a)Prove that the lengths of the tangents drawn from an external point to a circle are equal. 3

OR

(b)Prove that the opposite sides of a quadrilateral circumscribing a circle subtend supplementary angles at the centre of the circle.

29. (a)Prove that: $\frac{1+\sec A}{\sec A} = \frac{sin^2 A}{1-\cos A}$ 3

OR

(b) If $\cot\theta + \cos\theta = p$ and $\cot\theta - \cos\theta = q$, prove that $p^2 - q^2 = 4\sqrt{pq}$

30. Find the zeroes of the polynomial $p(x) = 3x^2 - 4x - 4$. Hence, write a polynomial whose each of the zeroes is 2 more than zeroes of $p(x)$. 3

31. Find the values of x and y from the following pair of linear equations: 3
62 x + 43 y = 167
43 x + 62 y = 148

(Section – D)

Section D consists of 4 questions of 5 marks each

32. Daily wages of 110 workers, obtained in a survey, are tabulated below: 5

Daily Wages(₹)	100-120	120-140	140-160	160-180	180-200	200-220	220-240
No. of workers	10	15	20	22	18	12	13

Compute the mean daily wages and modal daily wages of these workers.

33. (a)A tent is in the shape of a right circular cylinder up to a height of 3 m and then a right circular cone, with a maximum height of 13.5 m above the ground. Calculate the cost of painting the inner side of the tent at the rate of ₹ 2 per square metre, if the radius of the base is 14 m. 5

OR

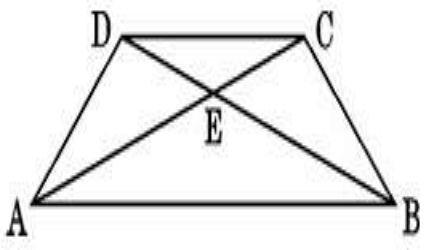
(b) A solid wooden toy is in the shape of a right circular cone mounted on a hemisphere of same radius. If the radius of the hemisphere is 4.2 cm and the total height of the toy is 10.2 cm, find the volume of the wooden toy. Also, find the total surface area of the toy.

34. (a)The time taken by a person to travel an upward distance of 150 km was $2\frac{1}{2}$ hours more than the time taken in the downward return journey. If he returned at a speed of 10 km/h more than the speed while going up, find the speeds in each direction. 5

OR

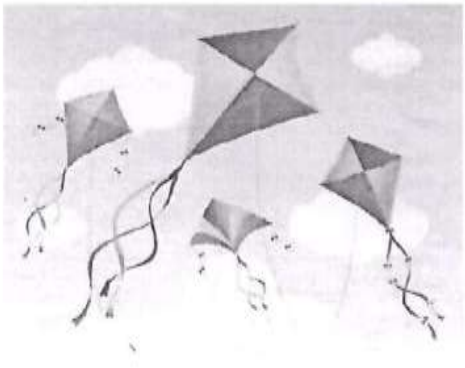
(b)The sides of a right triangle are such that the longest side is 4 m more than the shortest side and the third side is 2 m less than the longest side. Find the length of each side of the triangle by solving algebraically. Also, find the difference between the numerical values of the area and perimeter of the given triangle.

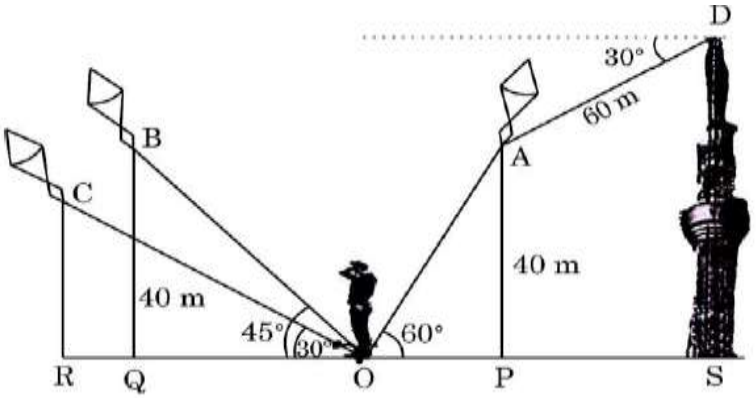
35. ABCD is a trapezium with AB ‖ DC. AC and BD intersect at E. If $\Delta AED \sim \Delta BEC$, then prove that AD = BC. 5



(Section – E)-Section E consists of 3 case study-based questions of 4 marks each.

36. The International Kite Festival takes place every year on 14th January. The main attractions of the festival include national and international Kite Flyers' Parade, kite flying, traditional stalls etc. On this day, few kite flyers, had assembled at a point 'O' on the ground. The position of 3 kites A, B, C was such that A and B were at the same vertical height of 40 m from the ground level. The angles of elevation of A, B and C from O were 60°, 45° and 30° respectively. A vertical tower, SD has been erected at point S and a camera is set at the top of the tower for photography.





Based on the information given above, answer the following questions:

(i) What is the length of the string of the kite at A ? 1

(ii) If the length of the string of kite at C is 40 m, then find the height of that kite C from the ground. 1

(iii) (a) What is the horizontal distance between the kites at A and B ? 2

OR

(iii) (b) If the angle of depression of the kite at A is 30° from the camera at D and the distance between A and D is 60 m, then find the height of the tower. 2

37. A school has decided to plant some endangered trees on 51st World Environment Day in the nearest park. They have decided to plant those trees in few concentric circular rows such that each succeeding row has 20 more trees than the previous one. The first circular row has 50 trees.

Based on the above given information, answer the following questions:

(i) How many trees will be planted in the 10th row? 1

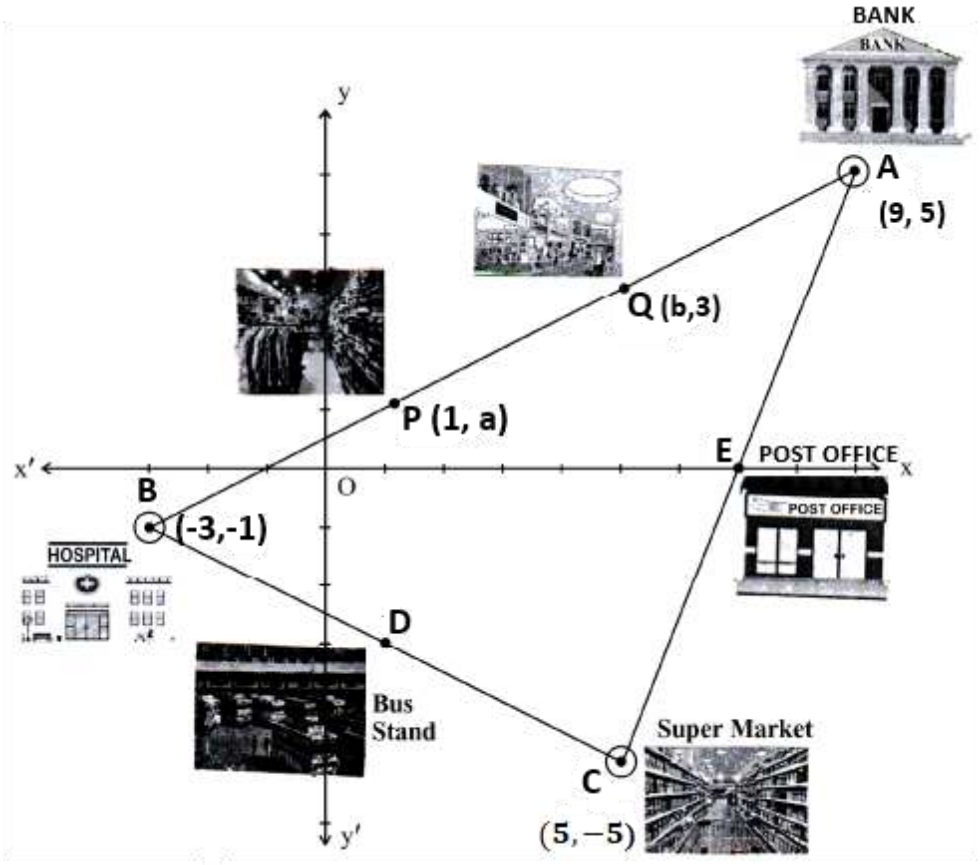
(ii) How many more trees will be planted in the 8th row than in the 5th row? 1

(iii) (a) If 3200 trees are to be planted in the park, then how many rows are required? 2

OR

(iii) (b) If 3200 trees are to be planted in the park, then how many trees are still left to be planted after the 11th row? 2

38. Partha, a software engineer, lives in Gandhinagar for his work. He lives in the most convenient area of the city from where bank, hospital, post office and supermarket can be easily accessed. In the graph, the bank is plotted A$(9, 5)$, hospital as B$(-3, -1)$ and supermarket as C$(5, -5)$ such that A, B, C form a triangle.



Based on the above given information, answer the following questions:

(i) Find the distance between the bank and the hospital. 1

(ii) In between the bank and the supermarket, there is a post office plotted at the mid-point E. Find the coordinates of E. 1

(iii) (a) In between the hospital and the supermarket, there is a bus stop plotted at mid-point D. If Partha wants to reach the bus stand from the bank, then how much distance does he need to cover? 2

OR

(iii) (b) P and Q are two different garment shops lying between the bank and the hospital, such that $BP = PQ = QA$. If the coordinates of P and Q are $(1,\ a)$ and $(b\ , 3)$ respectively, then find the values of 'a' and 'b'. 2

****