

Directorate of Education, GNCT of Delhi

Annual Practice Paper (Session: 2025-26)

Class – X

Subject – Mathematics

Duration: 3 hours

Max. Marks: 80

General Instructions:

1. This Question Paper has 5 Sections 'A', 'B', 'C', 'D' and 'E'.
2. Section A has 20 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 questions (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 Questions of 5 marks, 2 Questions 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. You have to attempt only one option out of these given options.
8. Draw neat figures wherever required.
9. Take $\pi = \frac{22}{7}$ wherever required, if not stated.
10. There is no provision of negative marking.
11. Use of calculator is not permitted.

Please do write down the Serial Number of the question before attempting it.

SECTION A

Section A consists of 20 questions of 1 mark each.

1. If one end of the diameter of a circle is $(-4, 0)$ and the other end is at $(2, 0)$, then radius of this circle is of length :
(a) 4 units (b) 6 units (c) 3 units (d) 2 units
2. $\sin 60^\circ \times \cos 30^\circ =$
(a) $\frac{3}{4}$ (b) $\frac{\sqrt{3}}{4}$ (c) 1 (d) $\frac{\sqrt{3}}{2}$
3. The discriminant of the quadratic equation $5x^2 + 7x + 2 = 0$ is:
(a) 3 (b) 9 (c) 7 (d) 4
4. The area of quadrant of a circle having circumference 22 cm is :
(a) 102.34 cm^2 (b) 45.82 cm^2 (c) 9.625 cm^2 (d) 95.15 cm^2
5. A semi-circular piece of paper of diameter 20 cm is rolled to form a cone. The slant height of the cone thus formed is :
(a) 10 cm (b) 5 cm (c) 20 cm (d) 15 cm
6. The quadrilateral formed by joining the points $(-3, 2)$, $(-5, -5)$, $(2, -3)$ and $(4, 4)$ taken in order is :
(a) rhombus (b) rectangle
(c) square (d) parallelogram
7. The linear equation $3x - 7y = 10$ when expressed in terms of x becomes:
(a) $10 + 7y$ (b) $3x - 10$ (c) $\frac{10+7y}{3}$ (d) $\frac{3x-10}{7}$

8. The class mark of modal class for the following frequency distribution is:

Time (in seconds)	0-20	20-40	40-60	60-80	80-100
No. of students	1	4	3	7	5

- (a) 70 (b) 80 (c) 90 (d) 100
9. An arc of a circle of length 6π subtends an angle of 120° at the centre. The diameter of the circle is:
(a) 18 cm (b) 12 cm (c) 15 cm (d) 16 cm
10. Which of the following are definitely similar to each other?
(a) Any two rhombus (b) Any two regular pentagons
(c) Any two isosceles triangles (d) Any two right triangles
11. The probability of choosing LETTER 'E' from the word INTERPENETRATE is:
(a) $\frac{2}{5}$ (b) $\frac{1}{2}$ (c) $\frac{3}{14}$ (d) $\frac{2}{7}$
12. The LCM of smallest two digit prime number and smallest odd prime number is :
(a) 33 (b) 3 (c) 22 (d) 11
13. The value of $\frac{5 \cos^2 30^\circ}{\tan 60^\circ + \sin 30^\circ}$ is :
(a) 1 (b) $\frac{\sqrt{3}}{2}$ (c) 2 (d) $\frac{1}{2}$
14. The roots of the quadratic equation $x^2 + 4x + 5 = 0$ are:
(a) real (b) not real (c) real and distinct (d) real and equal
15. If the sum of the areas of two circles having radii R_1 and R_2 is equal to the area of the circle having radii R , then:
(a) $R_1^2 + R_2^2 < R^2$ (b) $R_1 + R_2 = R$
(c) $R_1^2 + R_2^2 = R^2$ (d) $R_1 + R_2 < R$
16. The area of the quadrant of a circle is:
(a) $\frac{1}{4}$ of the area of the circle (b) half of the area of the circle
(c) twice the area of the circle (d) $\frac{1}{8}$ of the area of the circle
17. The value of d if HCF of 759 and 44 is $2d - 13$ is:
(a) 17 (b) 12 (c) 11 (d) 14
18. One card is drawn from a well-shuffled deck of 52 cards. The probability that the card will not be a face card is:
(a) $\frac{11}{52}$ (b) $\frac{5}{13}$ (c) $\frac{10}{13}$ (d) $\frac{9}{13}$

Directions for Q 19 & 20 : There is one Assertion (A) and one Reason (R). Choose the correct answer of these questions from the four options (a),(b),(c) and (d) given below :

- (a) Both Assertion (A) and Reason (R) are true and Reason (R) is the correct explanation of the assertion (A).
(b) Both Assertion (A) and Reason (R) are true but Reason (R) is not the correct explanation of the 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 $7 \tan \theta = 4$, then $\frac{7 \sin \theta - 3 \cos \theta}{7 \sin \theta + 3 \cos \theta} = 7$.

Reason (R) : $\tan \theta = \frac{\sin \theta}{\cos \theta}$.

20. Assertion (A) : $(4 \times 5 \times 73) + 37$ is a composite number.

Reason (R) : A prime number can be expressed as product of numbers.

SECTION – B

Section B consists of five questions of 2 marks each.

21. Prove that the line segment joining the point of contact of two parallel tangents of a circle passes through its centre.

22. Find the value of y if $y \sin 45^\circ \cos 45^\circ = \tan^2 45^\circ - \cos^2 30^\circ$.

23. Find the middle term of the AP: 5, 9, 13, 201.

OR

How many multiples of 6 lie between 50 and 708?

24. The length of minute hand of a clock is 6 cm. Find the area swept by it between 1:20 pm to 1:50 pm.

OR

Find the area of a sector of a circle with radius 6 cm if angle of the sector is 60° .

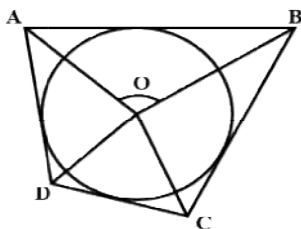
25. In $\triangle ABC$, right angled at C, $AB^2 = 2AC^2$. Prove that $\triangle ABC$ is an isosceles triangle.

SECTION – C

Section C consists of six questions of 3 marks each.

26. Find an acute angle A, when $\frac{\cos A - \sin A}{\cos A + \sin A} = \frac{1 - \sqrt{3}}{1 + \sqrt{3}}$

27. In the given figure, $\angle AOB = 125^\circ$. Find the value of $\angle COD$.



28. Compute the zeroes of the polynomial $x^2 - 6x - 16$. Also, establish a relationship between the zeroes and coefficients.

OR

α and β are zeroes of the quadratic polynomial $x^2 + 3x - y$. Find the value of 'y' if $5\alpha - 2\beta = 5$.

29. Cards marked 31, 33, 35, 101 are placed in a box and mixed thoroughly. One card is drawn from the box. Find the probability that the number on the card is:

- (i) a composite number
- (ii) a perfect square
- (iii) multiple of 7.

30. Prove that $6 + \sqrt{2}$ is an irrational number.

31. The following pair of linear equations of two variables represents co-incident lines. Find the value of a and b.

$$(2a - 1)x - 3y = 5$$

$$3x + (b - 2y) = 3$$

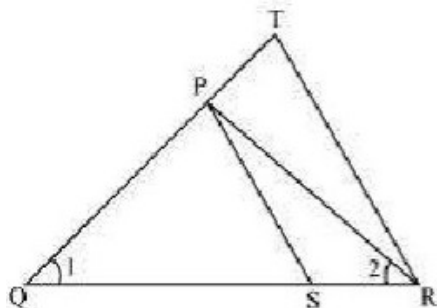
OR

Solve graphically: $3x - y = 4$ & $x + 5y = 10$

SECTION – D

Section D consists of four questions of 5 marks each.

32. In the given figure, $\frac{QR}{QS} = \frac{QT}{PR}$ and $\angle 1 = \angle 2$ then show that $\triangle PQS \sim \triangle TQR$.



33. The median weight of the 30 students as per the distribution given below is 53. Find the missing frequencies f_1 and f_2 .

Weight (in kg)	40- 45	45- 50	50- 55	55- 60	60- 65	65-70	70- 75
No. of stu- dents	2	10	f_1	3	5	f_2	2

34. A solid toy is in the form of a right circular cylinder with a hemispherical shape at one end and a cone at the other end. Their diameter is 4.2cm and the heights of the cylindrical and conical portions are 12cm and 7cm respectively. Find the volume of the toy.

OR

A solid consisting a hemisphere at the bottom, the cylinder in the middle and the cone on top is of radius 5 cm .The height of the cylinder is 10 cm and that of cone is 12 cm. Find the total surface area of the solid.

35. Solve $\frac{1}{x-3} + \frac{2}{x-2} = \frac{8}{x}$, $x \neq 0, 2, 3$

OR

The sum of the digits of a two-digit number is 9. Also, nine times this number is twice the number obtained by reversing the order of the digits. Find the number.

SECTION – E

Section E has three case based questions of 4 marks each.

36. A telecom company is surveying a region to install a new signal tower. During the survey a drone, 50 m above the ground, is flying at a constant altitude to capture top-view images. The drone pilot notices that the angle of depression from the drone to the top of an existing building is 30° . The same pilot observes that the angle of elevation from the ground to the drone is 60° , when looked at from a point on the ground directly in front of the building. The horizontal distance between the building and the observation point on the ground is 40 m.

Based on the above information, answer the following questions:

- | | |
|---|---|
| (i) Draw a neat diagram for the given situation. | 1 |
| (ii) Find the horizontal distance (x) between the drone and the observer. | 1 |
| (iii) Find the height of the building. | 2 |

OR

If a new tower is to be built exactly halfway between the building and the drone, what will be the horizontal distance of this point from the building?

37. Riya decides to save money every month. She starts with ₹200 in April and increases her savings by ₹50 every month and so on... She plans to continue this savings pattern for 2 years.



Based on the above information, answer the following questions:

- | | |
|--|---|
| (i) Write savings of Riya for first five months. | 1 |
| (ii) How much will she save in January? | 1 |
| (iii) What is the total amount saved in the first 12 months? | 2 |

OR

If she wants to save at least ₹5000 in 12 months, will her current plan achieve this target?

38. A city planner is designing a triangular park. The vertices of the park are A(2, 3), B(10, 3) and C(6, 11). A walking track is to be placed joining the midpoints of sides AB and AC.

Based on the above information, answer the following questions:

- | | |
|--|---|
| (i) Find length of the side AB of the park. | 1 |
| (ii) Find mid-point of AB. | 1 |
| (iii) Find the length of the walking track between them. | 2 |

OR

Find the type of the triangular park.