

O. P. JINDAL SCHOOL, SAVITRI NAGAR

Annual Examination - (2025 – 2026)

Class: IX
Subject: Mathematics

MM: 80
Time: 3Hrs.

(Fifteen Minutes Extra will be given for reading the Question Paper.)

General Instructions:

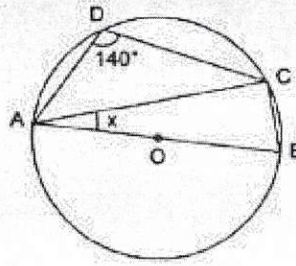
- i. This question paper contains **38** questions. All questions are compulsory.
- ii. This question paper is divided into **5 sections – Sections A,B,C,D and E.**
- iii. **Section A** comprises **20** questions (Q. no.1 to 20) of **1** mark each.
- iv. **Sections B** comprises **5** questions (Q. no.21 to 25) of **2** marks each.
- v. **Section C** comprises **6** questions (Q. no.26 to 31) of **3** marks each.
- vi. **Section D** comprises **4** questions (Q. no.32 to 35) of **5** marks each.
- vii. **Section E** comprises **3** questions (Q. no.36 to 38) of case study based carrying 4 marks each.
- viii. There is no overall choice. However an internal choice has been provided. You have to attempt only one of the alternatives in all such questions.
- ix. Use of calculator is not allowed.

Section A

Choose the correct option:

- Q1.** Find the remainder when $(x^2 - 3x - 5)$ is divided by $(x + 1)$.
 a) 0 b) -1 c) 1 d) none of these
- Q2.** Which graph is parallel to y-axis?
 a) $y = x + 1$ b) $y = 2$ c) $x = 3$ d) $x = 2y$
- Q3.** The number obtained on rationalizing the denominator $\left(\frac{2}{\sqrt{3}-1}\right)$ is:
 a) $\sqrt{3} + 1$ b) $2/\sqrt{3}$ c) $\frac{1}{\sqrt{3}+1}$ d) $\frac{\sqrt{3}+1}{2}$
- Q4.** In ΔABC , $BC = AB$ and $\angle B = 85^\circ$. Then $\angle A$ is equal to
 a) 10° b) 47.5° c) 50.5° d) 37.5°
- Q5.** If $x < 0$ and $y > 0$, then the point (x, y) lies in
 a) Quadrant I b) Quadrant II c) Quadrant III d) Quadrant IV
- Q6.** Find the value of $(a^2 + b^2)$, if $a + b = 10$ and $ab = 16$
 a) 32 b) 116 c) 160 d) 68
- Q7.** Which of the following is the zero polynomial?
 a) 0 b) $0x^3 + 0x$ c) both a and b d) none of these

Q8. In the figure, O is the centre of the circle. If $\angle ADC = 140^\circ$, then what is the value of x ?



- a) 90° b) 45° c) 50° d) 40°

Q9. The value of $\sqrt[3]{4} \times 2^{1/3}$

- a) 1 b) 2 c) $2^{1/3}$ d) none of these

Q10. If the points $A(-1, 0)$, $B(5, 0)$ and $C(2, \frac{1}{2}a - 2)$ lie on the x-axis, then the value of ' $2a$ ' is:

- a) 8 b) 0 c) 4 d) none of these

Q11. Which of the following statement is true?

- a) Only one line can pass through a single point.
 b) There is an infinite number of lines that pass through two distinct points.
 c) A terminated line can be produced indefinitely on both sides
 d) If two circles are equal, then their radii are unequal.

Q12. The coordinates of two points are $A(3, 4)$ and $B(-2, 5)$, then (abscissa of A) – (abscissa of B) =?

- a) -1 b) 1 c) 5 d) -5

Q13. The bisectors of any two adjacent angles of a parallelogram intersect at

- a) 30° b) 45° c) 60° d) 90°

Q14. The simplest form of $1.\bar{6}$

- a) $5/3$ b) $8/3$ c) $833/500$ d) none of these

Q15. If the radius of a sphere is doubled, then what is the ratio of their surface area?

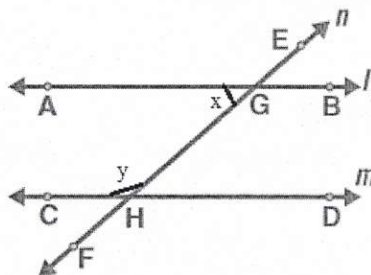
- a) 1 : 2 b) 2 : 1 c) 1 : 4 d) 8 : 1

Q16. The angles of a quadrilateral are in the ratio 3 : 4 : 5 : 6. The smallest of these angles is

- a) 45° b) 60° c) 36° d) 48°

Q17. In the given figure, $l \parallel m$ and line n is transversal, if angles x and y are in the ratio 2:3, then smaller angle is:

- a) 108° b) 72° c) 36° d) none of these



- Q18.** If ABCD is a parallelogram with two adjacent angles $\angle A = \angle B$, then the parallelogram is a
 a) Rhombus b) Trapezium c) Rectangle d) none of these

Directions: In the following questions a statement of assertion (A) is followed by a statement of reason (R).
 Mark the correct choice as:

- a) Both assertion (A) and reason(R) are true and reason (R) is 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.

- Q19. Assertion :** There are infinite number of lines which passes through (3, 2).

Reason: A linear equation in two variables has infinitely many solutions.

- Q20. Assertion :** Angles opposite to equal sides of a triangle are not equal.

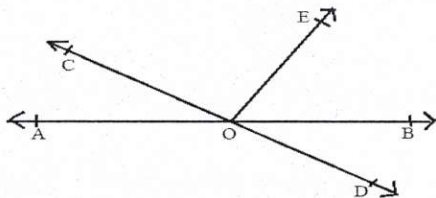
Reason : Sides opposite to equal angles of a triangle are equal.

Section B

Answer the following questions:

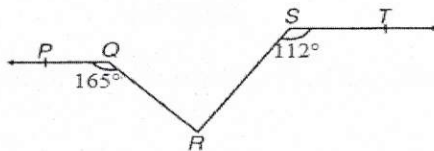
- Q21.** If A, B and C are three points on a line, and B lies between A and C then prove that $AB + BC = AC$.

- Q22.** In the figure, lines AB and CD intersect at O. If $\angle AOC + \angle BOE = 70^\circ$ and $\angle BOD = 40^\circ$, find $\angle BOE$ reflex $\angle COE$.



OR

In the given figure, if $PQ \parallel ST$, $\angle PQR = 165^\circ$ and $\angle RST = 112^\circ$, find $\angle QRS$.



- Q23.** Two parallel chords of lengths 30 cm and 16 cm are drawn on the opposite sides of the centre of a circle of radius 17 cm. Find the distance between the chords.

- Q24.** The radius and height of a cone are in the ratio 7 : 2. If the volume of the cone is 2772 cm^3 , find its radius and height.

OR

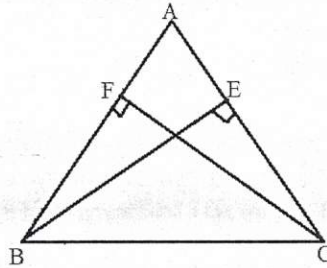
A sphere of diameter 15.6 cm is melted and cast into a right circular cone of radius 31.2 cm. Find the height of the cone.

Q25. Check whether $(7 + 3x)$ is a factor of $(3x^3 + 7x)$.

Section C

Q26. Find the values of a & b if $\frac{1+\sqrt{3}}{1-\sqrt{3}} = a + b\sqrt{3}$

Q27. ABC is an isosceles triangle in which altitudes BE and CF are drawn to equal sides AC and AB respectively. Show that these altitudes are equal.



OR

AD is an altitude of an isosceles triangle ABC in which $AB = AC$. Show that

(i) AD bisects BC

(ii) AD bisects $\angle A$.

Q28. Draw the graph of the linear equation $2x + y = 3$.

Q29. Find perimeter of rectangle whose area is $25x^2 - 35x + 12$.

OR

Factorise: (i) $64m^3 - 343n^3$

(ii) $27p^3 - \frac{1}{216} - \frac{9}{2}p^2 + \frac{1}{4}$

Q30. Two sides of a triangle are 120 cm and 170 cm and its perimeter is 540 cm. Find its area.

Q31. In parallelogram ABCD, two points P and Q are taken on diagonal BD such that $DP = BQ$. Show that:

(i) $\triangle APD \cong \triangle CQB$

(ii) $AP = CQ$

(iii) $\triangle AQB \cong \triangle CPD$

Section D

Q32. Prove that the quadrilateral formed by angle bisectors of a cyclic quadrilateral is also cyclic.

OR

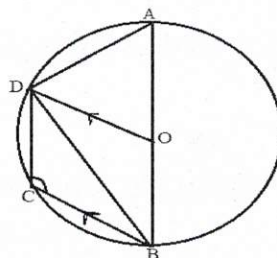
In the given figure, AB is a diameter of a circle with centre O and $DO \parallel CB$. If $\angle BCD = 120^\circ$, calculate

(i) $\angle BAD$

(ii) $\angle ABD$

(iii) $\angle CBD$

(iv) $\angle ADC$



Q33. A random survey of the number of children of various age groups playing in a park was found as follows:

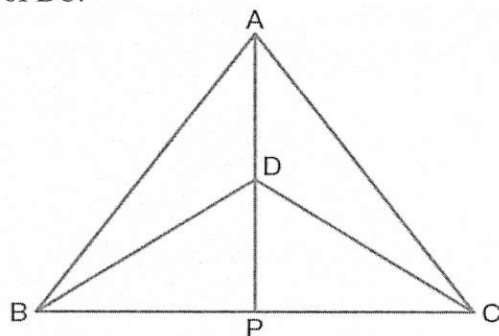
Age (in years)	1 – 2	2 – 3	3 – 5	5 – 7	7 – 10	10 – 15	15 – 17
Number of children	5	3	6	12	9	10	4

Draw a histogram to represent the above data.

Q34. ABCD is a rhombus and P, Q, R and S are the mid- points of the sides AB, BC, CD and DA respectively. Show that the quadrilateral PQRS is a rectangle.

Q35. $\triangle ABC$ and $\triangle DBC$ are two isosceles triangles on the same base BC and vertices A and D are on the same side of BC (see the figure). If AD is extended to intersect BC at P, show that

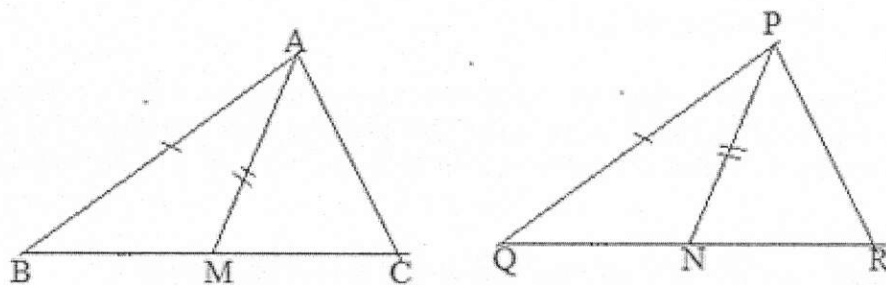
- (i) $\triangle ABD \cong \triangle ACD$ (ii) $\triangle ABP \cong \triangle ACP$ (iii) AP bisects $\angle A$ as well as $\angle D$.
 (iv) AP is the perpendicular bisector of BC.



OR

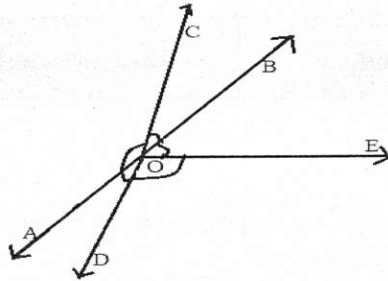
Two sides AB and BC and median AM of one triangle ABC are respectively equal to sides PQ and QR and median PN of $\triangle PQR$. Show that:

- (i) $\triangle ABM \cong \triangle PQN$ (ii) $\triangle ABC \cong \triangle PQR$



Section E

Q36. In the given figure AB is a straight line. Write the answer of the questions given below.

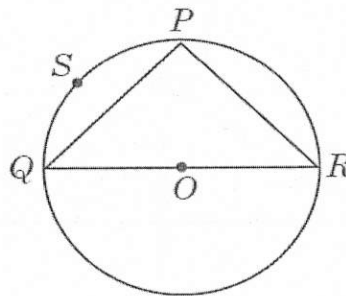


- (i) If $\angle AOD = 30^\circ$ and $\angle BOE = 45^\circ$ then find $\angle EOD$. (1)
- (ii) If $\angle AOC = 132^\circ$, then find $\angle BOC$. (1)
- (iii) If $\angle BOC = \angle AOD$, then prove that $\angle AOC = \angle BOD$. (2)

OR

If EO bisects $\angle BOD$ and $\angle AOD + \angle BOC = 40^\circ$ then find the value of $\angle AOC$ in terms of $\angle EOD$.

Q37. Ankit visited in a mall with his father. He sees that three shops are situated at P, Q, R as shown in the figure from where they have to purchase things according to their need. Distance between shop P and Q is 8 m, that of between shop Q and R is 10 m and between shop P and R is 6 m.



Considering O as the centre of the circle, answer the following questions.

- (i) Find radius of the circle. (1)
- (ii) What is the length of the longest chord? (1)
- (iii) What is the area of the triangle PQR? (2)

OR

If $\angle Q = 50^\circ$ then find the $\angle PSQ$.

Q38. A company deals in casting and melting of metal on orders received from its clients. In one such order, company is supposed to make 50 toys in the form of hemisphere surmounted by a right circular cone of the same base radius as that of hemisphere. If the radius of the base of the cone is 21 cm and height is 28 cm.

- (i) Find the volume of cone. (1)
- (ii) Find the volume of the outer curved surface area of hemisphere. (1)
- (iii) Find the volume of 50 toys. (2)

OR

Find the total surface area of one toy.
