INFINITY THINK BEYOND.....

AN EDUCATIONAL INSTITUTE

IX MIND CURVE Mid Term Maths Half Yearly 2025-26

Test 05

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S no	Syllabus Covered	Chapters(In Half Yearly)	Marking Scheme
1	Unit 1 Number System	Number system	14
2	Unit 2 Algebra	Polynomials Linear Equation in two variable	20
3	Unit 3 Geometry	Euclid's Geometry Lines & Angles Congruent Triangles	26
4	Unit 4 Coordinate Geometry	Coordinate Geometry	10
5	Unit 5 Mensuration	Heron's Formula	10

Note: Students/Teachers can refer to this Sample Paper for practice purpose. However, students may find or experience different exam pattern as syllabus or marking scheme may vary school to school.

MM:80 | **GENERAL INSTRUCTIONS** | **Time :3Hrs**

READ CAREFULLY ALL 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 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 2marks questions of Section E.**
8. **Draw neat figures wherever required. Take π =22/7 wherever required if not stated.**
9. **This paper consists of 38 questions.**
   a. **Write your answers neatly and legibly.**
   b. **Ensure you have not left any question unanswered**

SECTION – A

Questions 1 to 20 carry 1 mark each.

1. The degree of $5(t^3)^{1/3} - 7$ is :

(a) 0 (b)1 (c) 3 (d) not defined

2. A rational number between $\sqrt{2}$ and $\sqrt{3}$ is:

(a) $\frac{2}{5}$ (b) $\frac{3}{2}$ (c) $\frac{4}{3}$ (d) $\frac{1}{4}$

3. The angle which is equal to 5 times of its complement is

(a)30° (b)60° (c)45° (d)150°

4. If both (x+ 2) and (2x + 1) are factors of $ax^2 + 2x + b$, then the value of a – b is

(a)-1 (b) 2 (c) 1 (d)0

5. If a = −2 and b = −1 then $a^{-b} - b^{a}$ equals:

(a)-3 (b)1 (c)-1 (d)0

6. The sides of a triangular plot are in the ratio of 3 : 5 : 7 and its perimeter is 300 m. Find its area

(a)1500m² (b) $1500\sqrt{3}$ m² (c)1400m² (d)$1400\sqrt{3}$m²

7. Which one of the following is not a rational number :

(a) $\sqrt{2}$ (b) 0 (c) $\sqrt{4}$ (d)$-\sqrt{16}$

8. x+ 1 is a factor of the polynomial

(a) x^3+x^2-x+1 (b)x^3+x^2+x+1 (c)$x^4+x^3+x^2+1$ (d) $x^4+3x^3+3x^2+x+1$

9. Which of the following statements are 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

10. Which ofthe following is not a solution of x+2y = 6?

(a)2,2 (b)0,3 (c)6,0 (d)1,4

11. In graphical representation of y = – 4, in XY plane is:

(a) parallel to x – axis (b) parallel to y – axis

(c) passes through origin (d) None of these.

12. The mirror image of the point (−2, 3) on Y- axis is

(a)(−2, −3) (b) (−2, 3) (c) (2, −3) (d) (2,3)

13. In triangle PQR. if Q = 90°, then

(a) PQ is the longest side (b) QR is the longest side

(c) PR is the longest side (d) PP is the longest side

14. Degree of a zero polynomial is

(a)0 (b)1 (c) any natural number (d) not defined

15. According to Euclid's definition, the ends of a line are

(a) breadthless (b)points (c)lengthless (d) none of these

16. If a ray stands on a line then the sum of the adjacent angles so formed is

(a) 100^0 (b)180^0 (c) 90^0 (d) 360^0

17. The perimeter of a rhombus is 20 cm .One of its diagonals is 8cm .Then area of the rhombus is

(a) 24 cm² (b) 18 cm² (c) 14 cm² (d)36 cm²

18. The point (0, –3) lies on

(a) negative side of y – axis (b)negative side of x – axis

(c) positive side of x – axis (d)positive side of y – axis

19. Assertion: In triangle ABC, ∠c= ∠A, BC=4cm and AC=5cm. Then, AB=4cm.

Reason: In a triangle, angles opposite to two equal sides are equal.

(a) Both Assertion and Reason are correct and Reason is the correct explanation for Assertion

(b) Both Assertion and Reason are correct and Reason is not the correct explanation for Assertion.

(c) assertion is true but the reason is false.

(d) both assertion and reason are false.

20. Assertion: The height of an equilateral triangle having each side 4 cm is $2\sqrt{3}$cm

Reason: Area of an equilateral triangle = $\frac{\sqrt{3}}{4}$ a² sq. units

(a) both Assertion and reason are correct and reason is correct explanation for Assertion

(b) both Assertion and reason are correct but reason is not correct explanation for Assertion

(c) Assertion is true but reason is false.

(d) both Assertion and reason are false

SECTION – B
Questions 21 to 25 carry 2 mark each.

21. If polynomials $ax^3 + 3x^2 - 3$ and $2x^3 - 5x + a$ leaves the same remainder when each is divided by $x - 4$, find the value of a

22.(A) Answer the following questions:

(i) A point is such that the abscissa of the point (other than zero), equals the ordinate of the point. In which quadrants can the point lie?

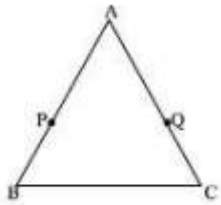
(ii) If the ordinate of a point is zero, and abscissa is 3 more than two times 1.Find the coordinate.

Or

(B) Find x and y if (3, 4) =(8x-1,5y-5).Hence find 2x+3y.

23. Express 0.00323232..... in the form p/q, where p and q are integers and $q \neq 0$.

24. In AB = AC and AP = AQ. Can you say that BP = CQ? Which Euclid's axioms are you using for this?



25.(A) Factorise: $(a-b)^3+(b-c)^3+(c-a)^3$

Or

(B) If $x + y = 3$ and $x^2 + y^2=5$, then find the value of xy and hence $x^3 + y^3$

SECTION – C
Questions 26 to 31 carry 3 mark each

26.(A) If each side of a triangle is doubled, then find the ratio of area of new triangle thus formed and the given triangle.

Or

(B) Two sides of a triangular field are 85 m and 154 m in length and its perimeter is 324 m. Find the area of the field.

27. In countries like USA and Canada, the temperature is measured in Fahrenheit, whereas in countries like India, it is measured in Celsius. Here is a linear equation that converts Fahrenheit to Celsius:

$F= (\frac{9}{5})c+32$

(i)If the temperature is 30°C, what is the temperature in Fahrenheit?

(ii)If the temperature is 95°F, what is the temperature in Celsius?

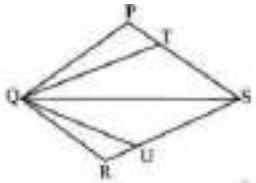
OR

(i)If the temperature is O°C, what is the temperature in Fahrenheit and if the temperature is O°F, what is the temperature in Celsius?

(ii) Is there a temperature which is numerically the same in both Fahrenheit and Celsius? If yes, find it.

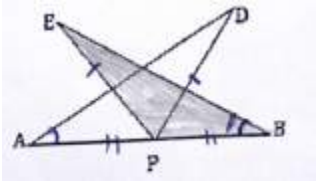
28. If $a = \frac{\sqrt{2}+1}{\sqrt{2}-1}$ and $b = \frac{\sqrt{2}-1}{\sqrt{2}+1}$, then find the value of $a^2 + b^2$

29. (A) In the figure PQRS is a quadrilateral and T and U are respectively points on PS and RS such that PQ = RQ, ∠PQT = ∠RQU and ∠TQS = ∠UQS. Prove that QT = QU.



Or

(B) AB is a line segment and P is the mid - point. D and E are points on the same side of AB such that ∠ BAD = ∠ABE and ∠ EPA = ∠ DPB. Show that:



(i)ΔDAP ≅ ΔEBP

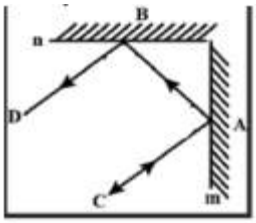
(ii)AD = BE (see figure)

30. Without actual division, prove that $2x^4 – 5x^3 + 2x^2 – x + 2$ is exactly divisible by $x^2 – 3x + 2$.

Or

If $x + \frac{1}{x} = 3$,find the value of $x^3 + \frac{1}{x^3}$

31. In the given figure m and n are two plane mirrors perpendicular to each other. Show that incident ray CA is parallel to the reflected ray BD.



SECTION – D

Questions 32 & 35 carry 5 mark each.

32. (A) Simplify ,by rationalizing the denominator $\frac{2\sqrt{6}}{\sqrt{2}+\sqrt{3}} + \frac{6\sqrt{2}}{\sqrt{6}+\sqrt{3}} - \frac{8\sqrt{3}}{\sqrt{6}+\sqrt{2}}$

Or

(B) Determine a and b if $\frac{7+\sqrt{5}}{7-\sqrt{5}} - \frac{7-\sqrt{5}}{7+\sqrt{5}} = a + 7\sqrt{5}b$

33. (i)Factorise x^3-3x^2-x+3

(ii)If a+b+c =0 then the value of $\frac{a^2}{bc} + \frac{b^2}{ac} + \frac{c^2}{ab}$

34. In the given figure, POQ is a line. Ray OR is perpendicular to line PQ. OS is another ray lying between rays OP and OR. Prove that ∠ROS= $\frac{1}{2}$(∠QOS-∠ POS).

35.(A) AB is a line segment. P and Q are points on opposite sides of AB such that each of them is equidistant from the points A and B. Show that the line PQ is the perpendicular bisector of AB.

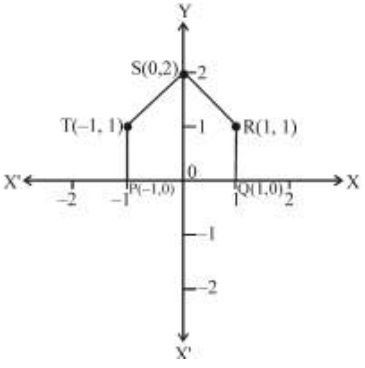
Or

(B) ΔABC is an isosceles triangle in which AB=AC .Side BA is produced to D such that AD= AB.Show that ∠BCD is a right angle.

SECTION – E

Questions 36 & 38 carry 4 mark each

36. Read the following text and answer the following questions on the basis of the same: Sohan draws a gate of a temple PQRST on the graph paper. He has following points : (-1,0),(1,0),(1,1), (-1, 1) and (0,2)



(i)Name the closed figure obtained.

(ii) In which quadrant (-1, 1) lies?

(iii) (a)Write the point that lies on Y-axis.

OR

(b)Write the coordinates of points of closed figure formed lying on X-axis.

37. Triangles are used in bridges because they evenly distribute weight without changing their proportions. When force is applied on a shape like rectangle it would flatten out. Before triangles were used in bridges, they were weak and could not be very big. To solve that problem engineers would put a post in the middle of a square and make it more sturdy. Isosceles triangles were used to construct a bridge in which the base and equal sides of an isosceles triangle are in the ratio 1:2:2 and its perimeter is 200 m

(i)What is the value of the common ratio?

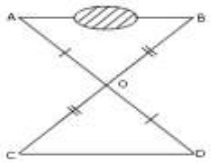
(ii) (a)What are the measurements of the sides of an isosceles triangle?

Or

(b)Find the semi-perimeter of the above triangle.

(iii)Find the cost of painting the so formed triangle at the rate of Rs 18.25 per m^2 .

38. Susmit wishes to determine the distance between two objects A and B. But there is an obstacle between these two objects (as shown in the figure) which prevents him from making a direct measurement. He thinks to avoid this difficulty. First, he fixes a pole at a convenient point O, so that from O both A and B are visible. Then he fixes another pole at the point D on the line AO (produced)such that AO = DO. In a similar way, he fixes a third pole at the point C on the line BO(produced) such that BO = CO. Then he measured CD as 80 cm.



(i)Write the name of the congruent triangles in the given figure and also state the congruency criteria applicable here.

(ii) In the given figure, if $\angle OCD = 65^0$ and $\angle ODC = 60^0$, find the value of $\angle AOB$.

(iii) (a)Find the length of AB. Justify your answer.

OR

(b) If OA=50cm, OB=60cm find the sum of the perimeter of the triangles AOB and COD.