INFINITY THINK BEYOND.....

AN EDUCATIONAL INSTITUTE

IX

Test 06

MIND CURVE Mid Term Maths Half Yearly 2025-26

By Deepika Bhati Teaching Mathematics Passionately since

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 contains 4 pages..
2. This Question Paper has 5 Sections A, B, C, D and E.
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 example of an irrational number is:

(a) $\sqrt{\frac{4}{9}}$ (b) $\frac{\sqrt{12}}{\sqrt{3}}$ (c) $\sqrt{8}$ (d) $\sqrt[3]{27}$

2. If $\sqrt{2}$ = 1.4142, then $\sqrt{\frac{\sqrt{2}-1}{\sqrt{2}+1}}$ is equal to

(a)2.4142 (b)5.8282 (c)0.4142 (d)0.1718

3. The value of $8\sqrt{15} \div 2\sqrt{3}$ is :

(a) $4\sqrt{5}$ (b) $2\sqrt{5}$ (c) $\sqrt{5}$ (d)20

4. Zero of the zero polynomial is :

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

5. If $x^{51} + 1$ is divided by x + 1, the remainder is :

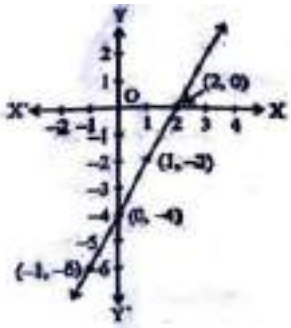
(a) 0 (b)1 (c)-1 (d)50

6. If $2(a^2+b^2)=(a+b)^2$ then

(a) a+b=0 (b)a=b (c)2a=b (d) ab=0

7. Given below is the graph of a linear equations in two variables. Select the equation whose graph is from the choices given below:

(a)x+y=0 (b)y=2x (c)y=2x+1 (d)y=2x-4



8. The point of the form (a, - a) always lies on the line:

(a) x = a (b) y = - a (c) x - y = 0 (d) x + y = 0

9. The distance of point P (-3, 4) from origin is :

(a) 3 units (b) 4 units (c) 5 units (d) 7 units

10. The point whose coordinates are of the form (a, b) such that ab < 0 always lie in:

(a) I or II quadrant (b) III or IV quadrants

(c) I or III quadrant (d) II or IV quadrant

11. It is known that if x + y = 10 then x+y+z = 10 + z. The Euclid's axiom that illustrates this statement is :

(a) First Axiom (b) Second Axiom

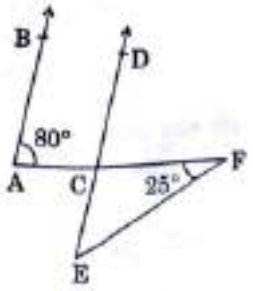
(c) Third Axiom (d) Fourth Axiom

12. The complement of supplement of 105° is :

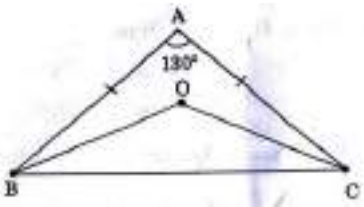
(a) 15° (b) 75° (c) 90° (d) 180°

13. In the figure given below, AB ∥ CD. If ∠CAB =80^O and ∠EFC =25^O then the measure of ∠CEF is

(a) 45° (b) 55° (c)65° (d) 75°



14. In an isosceles ΔABC, AB = AC and ∠A = 130°. If BO and CO are bisectors of ∠ABC and ∠ACB respectively, then the measure of ∠BOC is:



(a)50° (b)65° (c)145° (d)155°

15. In ΔABC and ΔPQR, AB = QR, BC = PR and CA = PQ, then :

(a) ΔABC ≅ ΔPQR (b) ΔCBA ≅ ΔPRQ

(c) ΔBAC ≅ ΔRPQ (d) ΔBCA ≅ ΔPQR

16. If ΔABC = ΔDEF, DE = 6 cm, EF = 9 cm and AC = 12 cm, then the perimeter of AABC is :

(a) 24 cm (b) 25 cm (c) 26 cm (d) 27 cm

17. The perimeter of an equilateral triangle is 60 cm. The area of the triangle is:

(a)$10\sqrt{3}$ cm ^{2} (b)$15\sqrt{3}$ cm ^{2} (c)$20\sqrt{3}$ cm ^{2} (d)$100\sqrt{3}$ cm ^{2}

18. An isosceles right triangle has area 8 cm^2 The length of its hypotenuse is:

(a) $\sqrt{32}$ cm (b) $\sqrt{16}$ cm (c) $\sqrt{24}$ cm (d) $\sqrt{48}$ cm

Directions : In the question number 19 and 20, a statement of Assertion (A) is followed by a statement of Reason (R). Choose the correct option :

(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) 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) : The equation of x-axis is y = 0.

Reason (R) : The line representing the equation x = a, where a is any real number is parallel to y-axis.

20. Assertion (A): Two distinct lines cannot have more than one point in common.

Reason (R): A unique line passes through two distinct points.

SECTION – B
Questions 20 to 25 carry 2 mark each.

21. If $2^{3x} \times 4^x = (8)^{\frac{1}{3}} \times (64)^{\frac{1}{6}}$, the find the value of 'x'.

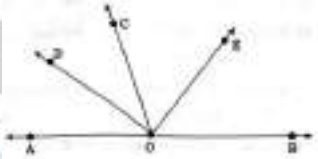
22. (A)Evaluate : $(125)^3 - (117)^3 - (8)^3$, using suitable algebraic identity.

OR

(B)Factorise : $8x^3 - 27y^3 + 18xy + 1$

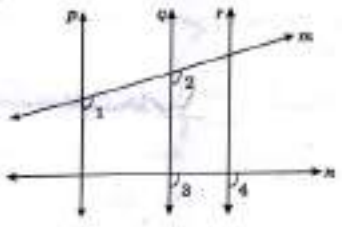
23. Find the coordinates of the points where the graph of the equation 3x-2y +6 =0 intersects with x-axis and y-axis respectively .

24. (A) In the figure given below, a ray OC stands on line AOB. OD and OE are the bisectors of ∠AOC and ∠BOC respectively. Prove that ∠DOE is a right angle.



OR

(B) In figure given below, ∠1 = ∠2 and ∠3 = ∠4. Prove that line p is parallel to line .



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25. Prove that vertically opposite angles are equal.

SECTION – C
Questions 26 to 31 carry 3 mark each

26. Express the value of $0.\overline{6} + 0.4\overline{7}$ in the form of $\frac{p}{q}$.

27. Represent $\sqrt{7.9}$ on the number line.

28. Factorize : $9x^3 - 3x^2 - 5x - 1$

29. (A) If (6, 5) is a solution of the equation (2k + 1) x - (k + 1) y = 15, find the value of 'k'. Hence, write the resultant equation.

OR

(B) Express 2(x + 3) = 3(y +2) in standard form ax + by + c = 0. Write values of a, b and c. Also, check whether the line representing the given equation passes through the origin.

30. If P (a + 1, 4) = Q (3, b - 2), then find the value of 'ab'. Also, write coordinates of the reflection of point R (a, b) in x-axis.

31. (A) The perimeter of an isosceles triangle is 32 cm. The ratio of the equal side to its base is 3: 2. Find the area of the triangle.

OR

(B) The perimeter of a triangle is 50 cm. One side of a triangle is 4 cm longer than the smaller side and the third side is 6 cm less than twice the smaller side. Find the area of the triangle.

SECTION – D

Questions 32 & 35 carry 5 mark each.

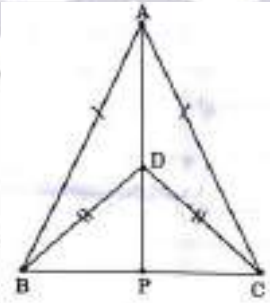
32. (A)If $x=\frac{\sqrt{3}+\sqrt{2}}{\sqrt{3}-\sqrt{2}}$ and $y=\frac{\sqrt{3}-\sqrt{2}}{\sqrt{3}+\sqrt{2}}$, then find the value of x^2-y^2 .

OR

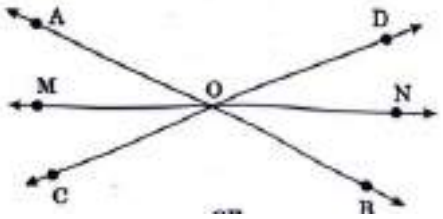
(B) If $a= 3+2\sqrt{2}$, then find the value of $a^3+\frac{1}{a^3}$

33. If $2x^3 + ax^2 + bx - 6$ has (x – 1) as a factor and leaves a remainder '2' when divided by (x - 2), find the relation between 'a' and 'b'. Also, find the values of a and b.

34. In the figure given below, ΔABC and ΔDBC are two isosceles triangles on the same base BC and the vertices A and D are on the same side of BC. AD is extended to intersect BC at P, prove that AP is perpendicular bisector of BC.

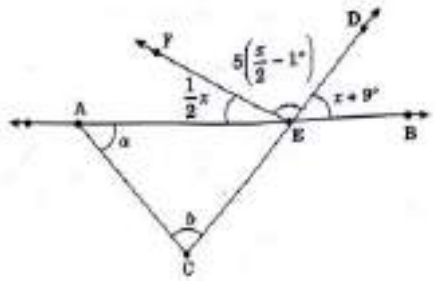


35. (A) Prove that if two lines intersect, each pair of vertically opposite angles are equal. In the figure given below, lines AB and CD intersect at point O. OM and ON bisect the pair of vertically opposite angles ∠ AOC and ∠BOD respectively. Prove that MON is a straight line.



OR

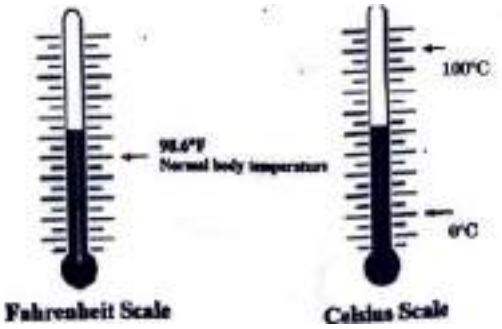
(B) In the figure given below, lines AB and CD intersect at point E. Find the value of (a + b)



SECTION – E

Questions 36 & 38 carry 4 mark each

36. The definition of temperature says that it is a measure of the hotness and coldness of a body. The two main units we often use to measure temperature are degree Celsius and degree Fahrenheit.



The linear equation that converts Fahrenheit (F) to Celsius (C) is given by $C^{O} \times 1.8 = {}^{O}F - 32$

Based on the above information, answer the following questions :

(i)Convert the normal body temperature in degree Celsius.

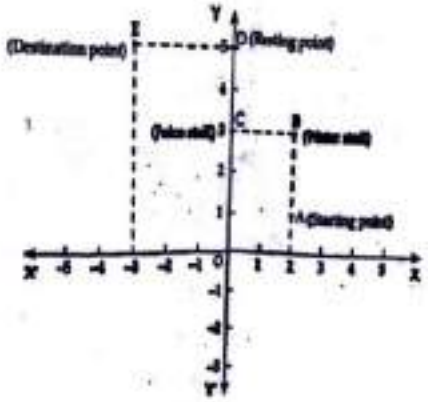
(ii)If the room temperature on a day is 35°C, then what will be its value in Fahrenheit scale?

(iii)(A) Convert the freezing point and boiling point of water in Fahrenheit scale.

OR

(B) What is the numerical value of the temperature which is same in both the scales?

37. To keep herself it, Sumati used to walk 5 km daily. On one particular day, Sumati participated in a marathon. The organizers used a coordinate plane to mark the course of the marathon. The path for the marathon is as follows:



Scale : one unit on the plane represents 1 km

The starting point is A. At B, there is a water stall to keep the participants hydrated. There is a juice stall at point C to keep them energetic. At D, there a rest point for those who want to take rest in between. E is the final destination point. Is

Based on the above situation, answer the following questions

(i)What are the coordinates of the point where juice stall is installed?

(ii)Write the quadrant in which destination point lie.

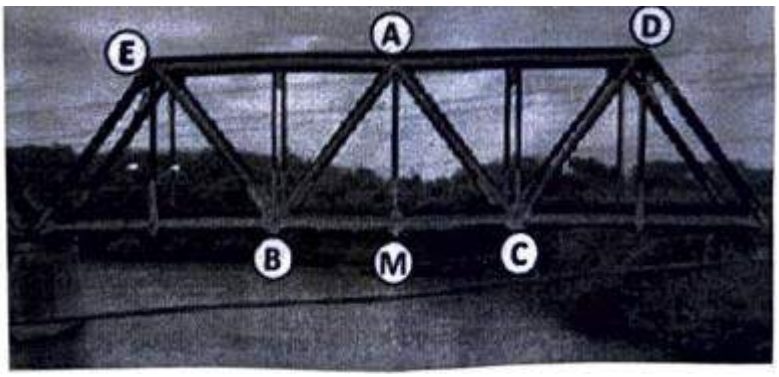
(iii)(A) Find the distance which each participant has to cover to reach the resting point.

OR

(B) Find the distance which each participant has to cover to reach the destination point from water stall.

38. Truss bridges are formed with a structure of connected elements that form triangular structures to make up the bridge. Trusses are the triangles that connect to the top and bottom cord and two end posts. You

can see that there are some triangular shapes as shown in the picture given below and these are represented asΔ ABC, ΔCAD and ΔABE.



Based on the above situation, answer the following questions :

(i)If AB = CD and AD = BC, by which congruency rule ΔABC ≅ ΔCDA?

(ii)If BE = AC and Δ EBA =ΔBAC , by which congruency rule ΔEBA ≅ ΔCAB ?

(iii)(A) If AM ⊥ BC and AB = AC, prove that AM bisects BC.

OR

(B) If A is the mid point of DE, BE ‖ CA and AB ‖ DC show that EB = AC.