INFINITY THINK BEYOND.....

AN EDUCATIONAL INSTITUTE

X MIND CURVE Mid Term Maths Test Series 2025-26

Test 02

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S no	Syllabus Covered	Chapters(In Half Yearly)	Marking Scheme
1.	Chapter 2	Polynomials	08
2	Chapter3	Pair of Linear Equation In Two Variable	10
3	Chapter4	Quadratic Equations	09
4	Chapter5	Arithmetic Progression	13

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:40	GENERAL INSTRUCTIONS	Time1.5Hrs

READ CAREFULLY ALL INSTRUCTIONS

1. **This Question Paper has 5 Sections A, B, C, D and E.**
2. **Section A has 10 MCQs carrying 1 mark each**
3. **Section B has 3 questions carrying 02 marks each.**
4. **Section C has 2 questions carrying 03 marks each.**
5. **Section D has 2 case based integrated units of assessment (04 marks each) with sub parts of the values of 1, 1 and 2 marks each respectively.**
6. **Section D has 2 questions carrying 05 marks each.**
7. **All Questions are compulsory.**
8. **This paper consists of 19 questions.**
   a. **Write your answers neatly and legibly.**
   b. **Ensure you have not left any question unanswered**

SECTION – A

Questions 1 to 10 carry 1 mark each.

1. The least value of k, for which the quadratic equation $2x^2 + kx - 4 = 0$ has rational roots is

(a) $\pm 2\sqrt{2}$ (b) 2 (c) ± 2 (d) $\sqrt{2}$

2. If the discriminant of the quadratic equation $3x^2 - 2x+c = 0$ is 16, then the value of c is

(a) 1 (b) 0 (c)-1 (d)$\sqrt{2}$

3. If the zeroes of the quadratic polynomial ax^2+bx+c, $c\neq0$ are equal, then

(a) c and b have opposite signs (b) c and a have opposite sings

(c) c and b have same signs (d) c and a have same signs

4. In an AP, if the first term a = 7, nth term $a_n = 84$ and the sum of the first terms $S_n = \frac{2093}{2}$, then n is equal to

(a) 22 (b) 24 (c) 23 (d) 26

5. The values of k for which the quadratic equation $kx^2 + 6x + 1 = 0$ has real and distinct roots are:

(a) k > 9 (b) $k < 9$ (c) $k \leq 9$ (d) $k \geq 9$

6. The lines represented by the linear equations $x + 2 = 0$ and $y = 3$ intersect at the point A. The coordinates of A are:

(a) (0, 3) (b) (−2, 0) (c) (2, −3) (d) (−2, 3)

7. In an AP, Sn =n $(4n^2 + 1)$. The second term of the AP is:

(a) 15 (b) 18 (c) 12 (d) 18

8. If the system of equations 3x+y =1 and (2k-1)x +(k-1)y =2k+1 is inconsistent, then k =

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

Question numbers 9 and 10 are Assertion and Reason based questions

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, but 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.

9. Assertion(A): The polynomial $f(x) = x^2 - 2x + 2$ has two real zeroes.

Reason(R): A quadratic polynomial can have at most two real zeroes.

10. **Assertion (A):** The equation $(3x - 4)^2 - 2 = 5x^2 + (2x + 1)^2$ is quadratic.

Reason (R): A quadratic equation is an equation of the form $ax^2 + bx + c = 0$, where a, b and c are real numbers and $a \neq 0$.

SECTION – B
Questions 11 to 13 carry 2 mark each.

11(A). If one zero of the polynomial $(a^2 + 16)x^2 + 16x + 8$ is reciprocal of other, find the value of a

OR

11(B). If α and β are the zeros of the polynomial $p(x) = 3x^2 - 2x - 1$, without finding the actual value of α and β evaluate $(1 - \alpha)(1 - \beta)$.

12. Solve the following for x.

$4x^2-4a^2x+(a^4-b^4) = 0$

13(A). How many terms of the AP: 108, 110, 112, ... must be taken to give a sum of 1170?

OR

13(B). Find the sum of all integers between 1 and 200 which are multiples of 3.

SECTION – C
Questions 14 to 15 carry 3 mark each

14(A). A train covered a certain distance at a uniform speed. If the train had been 6 km/hr faster, it would have taken 4 hours less than the scheduled time. Conversely, if the train had been 6 km/hr slower, it would have taken 6 hours more than the scheduled time. Find the length of the journey

OR

14(B). Anuj had some chocolates, and he divided them into two lots A and B. He sold the first lot at the rate of ₹2 for 3 chocolates and the second lot at the rate of ₹1 per chocolate, and got a total of ₹400. If he had sold the first lot at the rate of ₹1 per chocolate, and the second lot at the rate of ₹4 for 5 chocolates, historical collection would have been ₹460. Find the total number of chocolates he had.

15. If α value and β of are zeros. of the quadratic polynomial $p(x) = x^2 - 5x + 4$, then find the value of $\frac{1}{\alpha^2} + \frac{1}{\beta^2} - 2\alpha\beta$.

SECTION – D
Questions 16 to 17 carry 4 mark each.

16. Japan' Maglev is the fastest train in the world, with a speed record of 602 km/h. It could go the distance from New York City to Montreal in less than an hour. China has half of the eight fastest trains

and the world's largest high-speed railway network. Suppose a fast train takes 3 hours less than a slow train for a journey of 600 km. If the speed of the slow train is 10 km/h less than that of the fast train.

(i) Find the speed of the slow train.

(ii) Find the speed of the fast train.

(iii)(A) How much time taken by the slow train to cover the distance 600 km?

Or

(iii)(B) How much time taken by the fast train to cover the distance 600 km?

17. A road roller is a compactor-type engineering vehicle used to compact soil, gravel, concrete, or asphalt in the construction of roads and foundations. Similar rollers are used also at landfills or in agriculture. RCB Machine Pvt Ltd started making road roller 10 year ago. Company increased its production uniformly by fixed number every year. The company produces 800 roller in the 6th year and 1130 roller in the 9th year. On the basis of the above information, answer the following questions :

(i) What was the company's production in first year?

(ii) What was the increase in the company's production every year?

(**iii)(A)** In which year the company's production was 1350 rollers?

OR

(iii)(B) What was the company's production in the 8th year?

SECTION – E

Questions 18 to 19 carry 5 mark each.

18. Draw the graphs of the following equations: $2x - y = 1$ and $x + 2y = 13$. Find the solution of the equations from the graph and determine the area of the triangle formed by these lines with the y- axis.

19(A).The sum of first four terms of an AP is 40 and that of first 14 terms is 280. Find the sum of first n terms.

Or

19(B). If m times the m^{th} term of an AP is equal to n times the n^{th} term, show that $(m+n)^{th}$ term of the AP is zero.