INDIAN SCHOOL AL WADI AL KABIR

Pre-Mid-Term Examination (2023-24)

Sub: MATHEMATICS (041)

Class: X *Set-2* Max Marks: 30

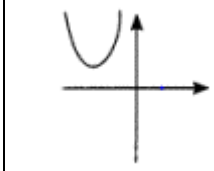
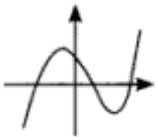
Date: 23-05-2023 Time: 1 hour

General Instructions:

1. This question paper is divided in to 4 sections- A, B, C and D.
2. Section A comprises of 7 questions of 1 mark each.
3. Section B comprises of 3 questions of 2 marks each.
4. Section C comprises of 3 questions of 3 marks each.
5. Section D comprises of two case study-based questions of 4 marks each.
6. Internal choice has been provided for certain questions.

Section A (1 mark each)

Q.1. Which of the following is not the graph of a quadratic polynomial?

A  **B**  **C**  **D** 

Q.2. The value of k for which the lines (k + 1)x + 3ky + 15 = 0 and 5x + ky + 5 = 0 are coincident is

A 14 **B** -14 **C** 2 **D** -2

Q.3. The LCM of the smallest two-digit number and the largest multiple of 6 which is less than 50 is

A 2 **B** 48 **C** 120 **D** 240

Q.4. If zeroes of the polynomial x^2 + ax – b are reciprocal of each other, then b is equal to

A -1 **B** 1 **C** a **D** $\frac{1}{a}$

<table>
<tr><td>Q.5.</td><td colspan="8">The pair of equations 4x + 6y = 9 and 2x + 3y = 6 have</td></tr>
<tr><td></td><td>A</td><td>many solutions</td><td>B</td><td>two solutions</td><td>C</td><td>no solution</td><td>D</td><td>one solution</td></tr>
<tr><td>Q.6.</td><td colspan="8">If HCF (a, b) = 12 and a × b = 1800, then LCM of (a, b) is</td></tr>
<tr><td></td><td>A</td><td>170</td><td>B</td><td>150</td><td>C</td><td>120</td><td>D</td><td>180</td></tr>
<tr><td>Q.7.</td><td colspan="8">DIRECTION: In the following question, 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) 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.
Statement A (Assertion): p(x) = $4x^3 - x^2 + 3x - 2^4$ is a polynomial of degree 4.
Statement R (Reason): The highest power of x in the polynomial p(x) is the degree of the polynomial.</td></tr>
<tr><td colspan="9">Section B (2 marks each)</td></tr>
<tr><td>Q.8.</td><td colspan="8">Find the largest number which divides 615 and 963 leaving remainder 6 in each case.</td></tr>
<tr><td>Q.9.</td><td colspan="8">If α and β are the zeroes of the quadratic polynomial $2x^2 + 11x + 5$, then find a polynomial whose zeroes are 2α and 2β.
OR
If α and β are the zeroes of the quadratic polynomial $p(x) = x^2 - (k - 3)x + 2(3k - 4)$,
find k if $\alpha + \beta = \frac{1}{2}\alpha\beta$</td></tr>
<tr><td>Q.10.</td><td colspan="8">Solve for x and y: 141x + 93y = 189;
93x + 141y = 45</td></tr>
</table>

Section C (3 marks each)

Q.11. Given that $\sqrt{2}$ is irrational, prove that $3 + 5\sqrt{2}$ is irrational.

Q.12. Find the zeroes of the quadratic polynomial $5x^2 - 4 - 8x$ and verify the relationship between zeroes and coefficients of the polynomial.

Q.13. Solve the following pair of linear equations graphically:

$2x + 3y = 12$ and $x - y = 1$

Find the area of the region bounded by the two lines representing the above equations and y -axis.

OR

If 2 is subtracted from the numerator and 1 is added to the denominator, a fraction becomes $\frac{1}{2}$, but when 4 is added to the numerator and 3 is subtracted from the denominator, it becomes $\frac{3}{2}$. Find the fraction.

Section D (4 marks each)

Case study-based – 1

Rupesh purchased 3 chairs and one table for ₹ 1600 and his friend purchased 5 chairs and 2 tables for ₹ 2900. In both the cases, price of each chair and table are the same.

Denoting the cost of one chair as ₹ x and the cost of one table as ₹ y, answer the following questions.

(i)	Represent the situations given above algebraically.	1m
(ii)	Write whether the pair of equations formed above are consistent or inconsistent.	1m
(iii)	Find the solution of the pair of linear equations formed by the above situation. **OR** Find the cost of 5 chairs.	2m

Q.15.

Case study-based – 2

Anjali made a small garden in her house. She planted many flower trees which attracts her many friends. It consists of 135 rose plants planted in certain number of rows. There is another set of 225 marigold plants, which is to be planted in the same number of rows.

Based on the above information, answer the following questions.

(i)	Find the prime factorization of 135.	1m
(ii)	Find the maximum number of plants in each row, if in each row equal number of plants of same kind are planted.	1m
(iii)	Find the total number of rows in which the plants are planted. **OR** Find the sum of the exponents of the prime factors of the total number of plants.	2m