INDIAN SCHOOL AL WADI AL KABIR

Pre-Mid-Term Examination (2023-24)

Sub: MATHEMATICS (041)

Class: X | *Set-2* (Marking Scheme) | Max Marks: 30

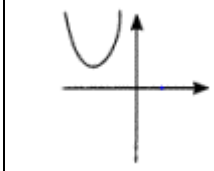
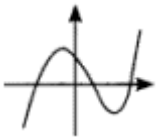
Date: 23-05-2023 | Time: 1 hour

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**	

Ans: (C)

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

Ans: (A) 14

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

Ans: (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**	$\frac{1}{a}$
	Ans: (A) -1						
Q.5.	The pair of equations 4x + 6y = 9 and 2x + 3y = 6 have						
	A	many solutions	**B**	two solutions	**C**	no solution	**D**	one solution
	Ans: (C) no solution						
Q.6.	If HCF (a, b) = 12 and a × b = 1800, then LCM of (a, b) is						
	A	170	**B**	150	**C**	120	**D**	180
	Ans: (B) 150						
Q.7.	***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.						
	Ans: (d) Assertion (A) is false but reason (R) is true.						
	Section B (2 marks each)						
8.	615 – 6 = 609; 963 – 6 = 957 $(\frac{1}{2})$ 609 = 3 x 7 x 29 $(\frac{1}{2})$ 957 = 3 x 11 x 29 $(\frac{1}{2})$ HCF (609, 957) = 3 x 29 = 87 $(\frac{1}{2})$						
9.	$\alpha + \beta = \frac{-11}{2}$, $\alpha\beta = \frac{5}{2}$ $(\frac{1}{2})$ $2\alpha + 2\beta = 2(\alpha + \beta) = 2 \times \frac{-11}{2} = -11$ $(\frac{1}{2})$ $2\alpha \times 2\beta = 4\alpha\beta = 4 \times \frac{5}{2} = 10$ $(\frac{1}{2})$ So, the required quadratic polynomial is x^2 +11x + 10. $(\frac{1}{2})$ OR Given $\alpha + \beta = \frac{1}{2}\alpha\beta$ k – 3 = $\frac{1}{2}$ x 2 (3k – 4) $(\frac{1}{2})$ k – 3 = 3k – 4 $(\frac{1}{2})$ 3k – k = -3 + 4 $(\frac{1}{2})$ 2k = 1; k = $\frac{1}{2}$ $(\frac{1}{2})$						

Q.10.	Adding the equations, 234x + 234y = 234 ⇒ x + y = 1	$(\frac{1}{2})$
	Subtracting the equations, 48x – 48y = 144 ⇒ x – y = 3	$(\frac{1}{2})$
	By elimination, x = 2, y = -1	$(\frac{1}{2} + \frac{1}{2})$
	Section C (3 marks each)	
11.	Assume that $3 + 5\sqrt{2}$ is rational.	**(1)**
	Arrives at contradiction since LHS and RHS are not equal.	**(1)**
	Hence conclude that $3 + 5\sqrt{2}$ is irrational.	**(1)**
12.	$5x^2 - 8x - 4 = 5x^2 - 10x + 2x - 4$ $= 5x(x-2) + 2(x-2)$ $= (x-2)(5x+2)$	$(1\frac{1}{2})$
	the zeroes of $5x^2 - 8 - 4$ are 2 and $\frac{-2}{5}$.	$(\frac{1}{2})$
	Now, sum of zeroes $= 2 + (\frac{-2}{5}) = \frac{8}{5} = \frac{-b}{a}$	$(\frac{1}{2})$
	product of zeroes $= 2 \times (\frac{-2}{5}) = \frac{-4}{5} = \frac{c}{a}$	$(\frac{1}{2})$
	Hence verified.	

13.	Graph	**(2)**
	Solution is (3, 2)	$(\frac{1}{2})$
	Area = 7.5 sq.units	$(\frac{1}{2})$
	OR	
	(x-2)/(y+1) = 1/2	$(\frac{1}{2})$
	2x -y = 5.....(i)	$(\frac{1}{2})$
	(x+4)/(y-3) = 3/2	$(\frac{1}{2})$
	2x - 3y = -17.....(2)	$(\frac{1}{2})$
	Solving eqns (1) and (2), we get x = 8 and y = 11	$(\frac{1}{2})$
	The required fraction is $\frac{8}{11}$	$(\frac{1}{2})$
	Section D (4 marks each)	
14.	**Case study-based – 1**	
	(i) 3x + y = 1600; 5x + 2y = 2900	$(\frac{1}{2} + \frac{1}{2})$
	(ii) Consistent	**(1)**
	(iii) x = 300, y = 700	**(1+1)**
	OR	
	Cost of 5 chairs = ₹ 1500	**(2)**
15.	**Case study-based – 2**	
	(i) $135 = 3^3 \times 5$	**(1)**
	(ii) HCF (135, 225) = 45	**(1)**
	(iv) $\frac{135+225}{45}$ = 8 rows	**(1+1)**
	OR	
	$360 = 2^3 \times 3^2 \times 5$	$(1\frac{1}{2})$
	Sum of exponents = 6	$(\frac{1}{2})$