ST. XAVIER'S SENIOR SECONDARY SCHOOL, DELHI - 110 054 Class 10 Time : $1\frac{1}{2}$ hrs. 20-9-2021 PERIODIC TEST – 2 - MATHEMATICS Name : Section : Roll No: General Instructions: The question paper contains three parts A, B and C. i) Section A consists of 20 questions of 1 mark each. Attempt any 16 questions. ii) Section B consists of 20 questions of 1 mark each. Attempt any 16 questions. iii) Section C consists of 10 questions based on two Case Studies. Attempt any 4 questions iv) from each case study. There is no negative marking. v) Answers are to be written in the paper attached at the end of the question paper. vi) Students should write the options in CAPITAL LETTERS only. SECTION - A Section A consists of 20 questions of 1 mark each. Any 16 questions are to be attempted. The value of k for which the lines 3x - y - 5 = 0 and 6x - 2y + k = 0 are parallel is 1. K ≠ - 10 K = 10B) C) K = -10 K ≠ 10 A) D) If HCF(a, b) = 12 and $a \times b = 1800$, then the LCM (a, b) is 2. D) 3600 B) 900 150 90 A) C) The zeroes of the quadratic polynomial $x^2 + x - 2$ is 3. B) -2, 1 -1, 2 D) -1, -2 A) 2, 1 C) 4. The distance of a point (6, 0) from the origin is B) 4 unit D) A) 6 unit C) 8 unit 10 unit 5. If cosec A = p and sec A = q, then cot A is D) A) pa B) p/q C) q/p 1/p In a circle of diameter 14 cm, an arc subtends 90° at the center. The length of the arc is 6. A) 11 cm B) 14 cm C) 44 cm D) 22 cm 7. The least number that is divisible by all natural numbers from 1 to 10 both inclusive is B) 100 504 2520 A) 10 C) D) If a and b are the two zeroes of the quadratic polynomial $2x^2 + 5x + 1$, then a + b + ab is 8. C) B) - 1 D) None of the above A) - 2 1 If 49x + 51y = 499 and 51x + 49y = 501; then x + y is 9. A) B) 10 C) D) 5 7 10. The distance of point P(2, 3) from x axis is A) 2 unit B) 5 unit C) 1 unit D) 3 unit 11. Area of the largest circle that can be inscribed in a square of side 8 cm is 64п cm² B) 32п ст² 16п ст² D) 24п cm² A) C) 12. The perimeter of the semicircular protractor whose radius is 7 cm is A) 22 cm B) 44 cm 36 cm D) C) 88 cm

13. If $p^2 = \frac{19}{36}$, then p is A) Rational B) Irrational C) Whole number D) Integer

A)		n can ho						
	econd equatior 6x + 8y +10:			B)	-6x = 8y + 2	10		
	-6x + 8y + 10 = 0				6x - 8y = -1			
			site number an 28	,			number is 14	
-		-		-		-		
The p A)	erimeter of a ti 5 unit	riangle v B)	with vertices (0 7 unit	, 4), (0, C)	0), (3, 0) is 12 unit	D)	$7\sqrt{5}$ unit	
If cos	ec A = $\frac{3}{2}$, then,	2(cosed	$c^{2}A + \cot^{2}A$) is	equal t	0			
A)	3	B)	7		9	D)	5	
		-		-	_	-		
		-	uadratic polyno	omial ax	x^{2} + bx + c (wh	ere a ≠	0); is 0,	
	he other zero i		а	\sim	-ab	D)	- <i>b</i>	
A)	$\frac{c}{a}$	B)	\overline{b}	C)	b	D)	$\frac{-b}{a}$	
If cin	$\Lambda = \frac{1}{2}$ and $\cos \theta$	$B - \frac{1}{2}$ (A, B < 90°) the	an value	$a \circ f A + B is$			
A)	$A = \frac{1}{2}$ and \cos^{-1}	$B = \frac{1}{2}, (A = B)$	4, B < 90) tik 60°	C)	90°	D)	45°	
A)	50	0)	00	C)	90	D)	Ъ	
The p	air of equation	s y = 0	and y = -7 has					
A)				B)	two solutions			
C)	infinitely mar	ıy soluti	ons	D)	no solution			
				TION -				
Section B consists of 20 questions of 1 mark each. Any 16 questions are to be attempted.								
		•			, , , , , , , , , , , , , , , , , , ,		P	
		two digi	t number and t		llest composite		-	
LCM c A)	of the smallest 12	-	t number and t 4				-	
A)	12	two digi B)	4	he sma C)	llest composite 20	e numbe	er is	
A) The p	12 air of linear eq	two digi B) uations		he sma C) I 3x + 2	llest composite 20 2y = 10 has	e numbe	er is	
A) The p A)	12 air of linear eq	two digi B) uations on	4 x + 2y = 5 anc	he sma C)	llest composite 20	e numbe D)	er is	
A) The p A) C)	12 air of linear eq unique solutio infinitely mar	two digi B) uations on iy soluti	4 x + 2y = 5 anc	:he sma C) I 3x + 2 B)	llest composite 20 2y = 10 has no solution	e numbe D)	er is	
A) The p A) C) If sin	12 air of linear eq unique solution infinitely mar A = cos A, the	two digi B) uations on ny soluti n A is	4 x + 2y = 5 anc on	he sma C) I 3x + 2 B) D)	llest composite 20 2y = 10 has no solution none of the a	e numbe D) bove	er is 45	
A) The p A) C)	12 air of linear eq unique solutio infinitely mar	two digi B) uations on iy soluti	4 x + 2y = 5 anc	:he sma C) I 3x + 2 B)	llest composite 20 2y = 10 has no solution	e numbe D)	er is	
A) The p A) C) If sin A)	12 air of linear eq unique solution infinitely mar A = cos A, theo 30°	two digi B) uations on ny soluti n A is B)	4 x + 2y = 5 anc on	the sma C) I 3x + 2 B) D) C)	llest composite 20 2y = 10 has no solution none of the a 60 °	e numbe D) bove D)	er is 45	
A) The p A) C) If sin A)	12 air of linear eq unique solution infinitely mar A = cos A, theo 30°	two digi B) uations on iy soluti n A is B) line seg	4 x + 2y = 5 and on 45°	the sma C) I 3x + 2 B) D) C) (-2, 8) a	llest composite 20 2y = 10 has no solution none of the a 60 °	e numbe D) bove D)	er is 45	
A) The p A) C) If sin A) The m A)	12 air of linear eq unique solution infinitely mar A = cos A, theo 30° hidpoint of the (-4, -6)	two digi B) uations on ny soluti n A is B) line seg B)	4 x + 2y = 5 and on 45° ment joining Ad (2, 6)	the sma C) I 3x + 2 B) D) C) (-2, 8) a C)	llest composite 20 2y = 10 has no solution none of the a 60° and B(-6, -4) is (4, 2)	e numbe D) bove D) D)	er is 45 90 ° (-4, 2)	
A) The p A) C) If sin A) The m A) If the	12 air of linear eq unique solution infinitely mar A = cos A, then 30° hidpoint of the (-4, -6) perimeter of a	two digi B) uations on iy soluti n A is B) line seg B) circle is	4 x + 2y = 5 and on 45° ment joining A((2, 6) s equal to that o	the sma C) I 3x + 2 B) D) C) (-2, 8) a C) of a squ	llest composite 20 2y = 10 has no solution none of the a 60° and B(-6, -4) is (4, 2) hare, then the r	e numbe D) bove D) D) ratio of	er is 45 90° (-4, 2) their areas is	
A) The p A) C) If sin A) The m A)	12 air of linear eq unique solution infinitely mar A = cos A, theo 30° hidpoint of the (-4, -6)	two digi B) uations on ny soluti n A is B) line seg B)	4 x + 2y = 5 and on 45° ment joining Ad (2, 6)	the sma C) I 3x + 2 B) D) C) (-2, 8) a C)	llest composite 20 2y = 10 has no solution none of the a 60° and B(-6, -4) is (4, 2)	e numbe D) bove D) D)	er is 45 90 ° (-4, 2)	
A) The p A) C) If sin A) The m A) If the A)	12 air of linear eq unique solution infinitely mar A = cos A, theo 30° hidpoint of the (-4, -6) perimeter of a 22:7	two digi B) uations on iy soluti n A is B) line seg B) circle is B)	4 x + 2y = 5 and on 45° ment joining A (2, 6) s equal to that of 14:11	the sma C) I 3x + 2 B) D) C) (-2, 8) a C) of a squ C)	llest composite 20 2y = 10 has no solution none of the a 60° and B(-6, -4) is (4, 2) hare, then the r 7:22	e numbe D) bove D) D) ratio of D)	er is 45 90 ° (-4, 2) their areas is 11: 14	
A) The p A) C) If sin A) The m A) If the A)	12 air of linear eq unique solution infinitely mar A = cos A, theo 30° hidpoint of the (-4, -6) perimeter of a 22:7	two digi B) uations on iy soluti n A is B) line seg B) circle is B)	4 x + 2y = 5 and on 45° ment joining A((2, 6) s equal to that o	the sma C) I 3x + 2 B) D) C) (-2, 8) a C) of a squ C) ber $\frac{1458}{125}$	llest composite 20 2y = 10 has no solution none of the a 60° and B(-6, -4) is (4, 2) hare, then the r 7:22	e numbe D) bove D) D) ratio of D) after	er is 45 90 ° (-4, 2) their areas is 11: 14	
A) The p A) C) If sin A) The m A) If the A) The d A)	12 air of linear eq unique solution infinitely mar A = cos A, then 30° hidpoint of the (-4, -6) perimeter of a 22:7 ecimal expansion 1 decimal	two digi B) uations on iy soluti n A is B) line seg B) circle is B) on of th B)	4 x + 2y = 5 and on 45° ment joining A((2, 6) s equal to that of 14:11 e rational numl 2 decimal	the sma C) I 3x + 2 B) D) C) (-2, 8) a C) of a squ C) ber $\frac{1458}{125}$ C)	llest composite 20 2y = 10 has no solution none of the a 60° and B(-6, -4) is (4, 2) hare, then the r 7:22 will terminate 3 decimal	e numbe D) bove D) D) ratio of D) after _ D)	er is 45 90° (-4, 2) their areas is 11: 14 places.	

27.	The radius of a circle whose circumference is equal to sum of the circumference of two circles of diameter 36 cm and 20 cm.							
	A)	20 cm	B)	24 cm	C)	28 cm	D)	32 cm
28.	The H A)	HCF of 48 and 3 8	120 is B)	12	C)	24	D)	36

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One equation of a pair of dependent linear equation is -3x + 4y = 5.

30.	Area c A)	of the largest tr r ²	iangle tl B)	hat can $\frac{1}{2}$ r ²	be insc	ribed in C)	a semicircle of 2r ²	f radius D)	r is $\sqrt{2}r^2$	
31.	The fo A)	ourth vertex of (0, -1)		ogram A (0, 1)	.(-2, 3),		'), C(8, 3) is (-1, 0)	D)	(1, 0)	
32.	If a pair of linear equations is consistent th A) Parallel B) C) intersecting D)						en the corresponding lines will be Always coincident intersecting or coincident			
33.	Y axis A)	divides the line 2:7	e segme B)	nt joine 3:7	d by po	oints (-4 C)		interna D)	lly in the ratio 3:4	
34.	The a A)	rea of a square 4 r ²	that ca B)	n be ins 2 r ²	cribed i	n a circ C)	cle of radius r is 3 r ²	; D)	Π r ²	
35.	If 176 A)	$4 = 2^{a} \times 3^{b} \times 3^{b}$	7 ^c , then B)	a + b + 4	- c =	C)	5	D)	6	
36.	The lir A) C)	ne x = 2 and y Intersecting Coincident	= 3 are			B) D)	Parallel None of the a	bove		
37.	. The prime factors of the denominator of 123.457 when expressed in the form of a ratio number are							form of a rational		
	A)	2, 3	B)	2, 3, 5		C)	2, 5	D)	3, 5	
38.	A)	of the followin x = 1, y = 2 x = 3, y = 1	ig is a so	olution o	of the p	air of lii B) D)	near equations x = 2, y = 1 x = 1, y = 3	x + 2y	= 5 and 7x + 3y = 3	
39.	The p A) C)		on of 11	.025 is		B) D)	$3^2 \times 5^2 \times 21$ $3^2 \times 5^2 \times 17$			
40.	If a pole 6m high, casts a shadow of $2\sqrt{3}$ m long on the ground, then the sun's angle of									

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m high, casts a shadow of $2\sqrt{3}$ m long on the ground, then the sun's angle of 40. elevation is A)

C) 30° 60 ° B) 45° D) 90°

SECTION – C (Case study based questions)

Section C consists of 10 questions of 1 mark each. Attempt any 4 questions from each case study.

CASE STUDY – 1

Std. 10

The below picture is a natural example of parabolic shape which is represented by a quadratic polynomial. A parabolic arch is an arch in the shape of a parabola. In structure, their curve represents an efficient method of load, and so can be found in bridges and in architecture in a variety of forms.



Std.	10
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41.	 In the standard form of a quadratic polynomial ax² + bx + c; a, b and c are A) Real Numbers B) Rational Numbers C) a' is a non-zero real number and b and c are any real number D) All are integers 							
42.	A quadratic po A) 1 zero		have maximun 2 zeroes		3 zeroes	D)	Infinite zeroes	
43.	If a and $\frac{1}{a}$ a A) 4	re the zeroes		ic polyn			n k is 2	
44.	The polynomia A) No zer	al x ² - 1 has oes B)	2 zeroes	C)	3 zeroes	D)	Infinite zeroes	
45.	The zeroes of A) 3 and 4	the polynomi 4 B)		re C)	3 and – 4	D)	- 3 and - 4	

CASE STUDY – 2

Ajay, Bhigu and Colin are fast friend since childhood. They always want to sit in a row in the classroom . But teacher doesn't allow them and rotate the seats row-wise everyday. Bhigu is very good in maths and he does distance calculation everyday. He consider the centre of class as origin and marks their position on a paper in a co-ordinate system. One day Bhigu make the following diagram of their seating position.

