## CLASS - X (ICSE) MATHEMATICS

Time: 21/2 hrs.

M.M.: 80

Answer to this paper must be written on the paper provided separately. You will not be allowed to write during the first 15 minutes. This time is to be spent in reading the question paper. The time given at the head of this paper is the time allowed for writing the answers.

Attempt all the questions from Section A and any four questions from Section B. All working including rough work, must be clearly shown, and must be done on the same sheet as the rest of the answer.

Omission of essential working will result in the loss of marks. The intended marks for questions or parts of question are given in the brackets []. Mathematical tables are provided.

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	SECTION 'A' -	40 Marks		The large his City	
	(Attempt all questions	from this s	ection)	1000000	[15]
2.1.	Choose the correct answers to the questions	s from the	given opi	ions:	[13]
.,	(i) If $(x-1)$ is a factor of $2x^2 - ax - 1$ , the	n the value	e of 'a' is:		
	(a) 1 (b) 1	(C)	3	(d)	-3
	(ii) Mr Charma ananad a recurring den	osit accour	nt in a bar	nk and depo	osited ₹800
	(ii) Mr. Sharma opened a recurring dep per month for 1½ years. If he receive	ed ₹ 16000	at the tim	e of maturi	ty then
	per month for 172 years. If he receive				
	interest is :	(b)	₹1600	a particular standar	3.8
	(a) ₹3200	(d)	none of	these	
	(c) ₹ 14400 (iii) In the given figure, ∠BAP = ∠DCP	- 70° PC =	6 cm and	CA = 4 cm	, then
	(iii) In the given figure, $\angle BAP = \angle DCP$	- 70 ,10-	o cin and	ne k	8
	PD: PB is:				
	(a) 5:3	R			
	(b) 3:5				
	(c) $3:2$	.0°	<b>∠</b> P .		
	(d) 2:3	0 1/5 .1	-\ th-no	a consocuti	ve terms of
	(iv) The value of p, for which (2p+1), 10	) and (5p+	o) are thre	e consecuti	ve terms or
	an A.P. is:		April 1997	(4)	2
	(a) $-1$ (b) $-2$	(c)	1	(d)	2
	(v) The point (3, 0) is invariant under	reflection 11	n:		
	(a) the origin	(b)	x-axis		
	(c) y-axis	(d)		and y-axis	
	(vi) If $\begin{bmatrix} x+3y & y \\ 7-x & 4 \end{bmatrix} = \begin{bmatrix} 4 & -1 \\ 0 & 4 \end{bmatrix}$ , then the x	1 (1.	> :		
	(vi) If $\begin{vmatrix} x + 3y & y \\ z & 4 \end{vmatrix} = \begin{vmatrix} y & y \\ 0 & 4 \end{vmatrix}$ , then the v	value of (x =	+ y) is:		
		()	7	(4)	<b>-</b> 7
	(a) -3 (b) -4	(c)	/	(d)	
	(vii) If $x \in \{-3, -1, 0, 1, 3, 5\}$ , then the s	solution set	of the ine	quation 3x-	2 < 7 is:
	(a) {-3, -1, 1, 3}	-1. 48 -95			
	(b) {-3, -2, -1, 0, 1, 2}			340	
	(c) {-3, -1, 0, 1}				
	(d) $1-3-2-1.0.1.2.3$				
	(viii) If 3, 12, y are in continued propor	rtion, then t	he value o	of 'y' is:	
	(a) 36 (b) 24	(c)	48	(d)	96
	(ix) The slope of the line $x+y=5$ is				in in a
	(a) -1 (b) 1	(c)	0	(d)	Not defined
	(x) Ouotation of the share of a comp	oany is as fo	ollows:		
	"15% ₹ 50 share at a discount of ]	10% "		. FO	
	Assertion (A): The market	value of the	e share is	50.	
	Reason (R) : The face val	ue of the sh	nare is < 50		

Reason (R)

		(a) A is true, K is false.						
		(b) A is false, R is true.						
		(c) Both A and R are true.						
		(d) Both A and R are false.						
	(xi)	A retailer purchased an item for ₹ 1500 from a wholesaler and sells it to a						
		consume for 1650. The sales are intra-state and rate of GST is 10%. The amount						
		of GST paid by the retailer is:						
		(a) ₹15 (b) ₹30						
	G 4/C	(c) ₹150 (d) ₹165						
	(xii)	The probability of the sun rising from the east is P(S). The value of P(S) is:						
		(a) $P(S) = 0$ (b) $P(S) < 0$						
		(c) $P(S) = 1$ (d) $P(S) < P(S) \le 1$						
	(xiii)							
	(×111)	If 3 is the root of the quadratic equation $x^2 - px + 3 = 0$ , then p is equal to:						
1.1	(seize)	(a) 4 (b) 3 (c) 5 (d) 2						
	(xiv)	A list of number whose nth term is 3n-5, represents an A.P.						
		Statement -1: The 11th term of the list 3x-5 is 27.						
		Statement -2: The common difference of an A.P. cannot be negative number						
		(a) Both the statements are true.						
		(b) Both the statements are false.						
		c) Statement 1 is true, and statement 2 is false.						
		d) Statement 1 is false, and statement 2 is true.						
	(xv)	A $(1, 4)$ , B $(4, 1)$ and C $(x, 4)$ are the vertices of $\triangle$ ABC. If the centroid of the						
		triangle is G (4, 3), then x is equal to:						
		(a) 2 (b) 1 (c) 7 (d) 4						
Q.2.	(i)	Using Properties of proportion, find a: b, given:						
	. 10							
		$\frac{a^3 + 3ab^2}{b^3 + 3a^2b} = \frac{63}{62}$						
		$b^3 + 3a^2b - 62$						
	(ii)	Find the equation of a line parallel to the line $2x + y - 7 = 0$ and passing						
		through the intersection of the lines $x + y - 4 = 0$ and $2x - y = 8$ [4]						
	(iii)	Show that $(x - 1)$ is a factor of the polynomial $3x^3 + 8x^2 - 15x + 4$ . Hence factorize						
		the polynomial completely.						
Q.3.	(i)	In a recurring deposit account for 2 year, the total amount deposited by a						
		person is ₹ 9600. If the interest earned by him is one-twelfth of his total deposit,						
		then find:						
		(a) the interest he earns.						
		(b) his monthly deposit.						
		(c) the rate of interest.						
	(ii)	Rohit invested ₹ 9600 in ₹ 100 shares at ₹ 20 premium paying 8% dividend.						
		Rohit sold the shares when the price rose to ₹ 160. He invested the proceeds						
		(excluding dividend) in 10% ₹ 50 shares at ₹ 40 . Find the : [4]						
		(a) the original number of shares						
		(b) the sale proceeds						
		(c) new number of shares						
		(d) change in two dividends						
	(iii)	Use graph paper sheet for this question :						
		Take 2 cm = 1 unit along both the axes. [5]						
		(a) Plot A, B, C where A (0, 4), B (1, 1) and C (4, 0)						
		(b) Reflect A and B on the x-axis and name them as F and D						
		(c) Reflect B infoligii offeril and flame if F Write dover the						
		(d) Reflect b and Colline y-axis and flame them as H and C						
		(e) Join points A, b, C, D, E, T, S, II and A in order and name the closed						
		figure formed.						

## (Attempt any four questions from this section)

Q.4. (i) Solve the following inequation, write the solution set and represent it on the real number line:

[3]

- $-2\frac{5}{6} < \frac{1}{2} \frac{2x}{3} \le 2, x \in W$
- When  $x^3 + 3x^2 kx + 4$  is divided by x 2, the remainder is k. Find the value of the constant k.

The following bill shows the GST rate and the marked price of articles: (iii)

S.N	lo.	Item	Marked price	- D.	1.5	
(a	7	LED TV set		Discount	Rate of GST	
	(b)		₹ 12000		20%	
(D)	1	Dry fruits	₹ 1200	₹ 200	10%	
O		MP4 player	₹6000			
		1 /	\ 0000	₹ 600	15%	

Find the total amount to be paid (including GST) for the above bill.

- Mr. Gowami deposits ₹ 1000 every month in a recurring deposit account for Q.5. (i) 5 years at 8% interest per annum. Find the matured value.
  - [3] A bag contains 25 cards, numbered through 1 to 25. A card is drawn at random, what is the probability that the number on the drawn card is:
  - (a) multiple of 5

(ii)

- a perfect square
- a prime number? (c)
- A trader buys x articles for a total cost of ₹ 600. (iii)

[4]

- Write down the cost of one article in terms of x. If the cost per article were ₹5 more, the number of articles that can be bought for ₹600 would be four less.
- Write down the equation in x for above situation and solve it to find x.
- Salman invests a sum of money in ₹ 50 shares, paying 15% dividend quoted Q.6. (i) at 20% premium. If his annual dividend is ₹ 600, calculate :

[3]

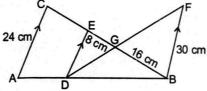
- the number of shares he bought. (a)
- (b) his total investment.
- (c) The rate of return on his investment.
- A bag contains 6 red balls and some blue balls. If the probability of drawing (ii) a blue ball is twice that of a red ball. Find the number of total possible outcomes.

[3]

(iii) In the given figure, AC || DE || BF, If AC = 24 cm, EG = 8 cm, GB = 16 cm, BF = 30 cm:

[4]

- (a)
  - Prove :  $\triangle$ GED  $\sim \triangle$  GBF **(b)** Find the length of DE
  - (c) Find DB: AB



- Q.7. (i) Given a line segment AB joining the points A(-4, 6) and B(8, -3), Find: [3]
  - (a) the ratio in which AB is divided by the y-axis at point M (say).
  - (b) the coordinates of the point of intersection M.
  - The first and last terms of a G.P. are 3 and 96 respectively. If the common ratio (ii) is 2, find:
    - (a) 'n' the number of terms of the G.P.
    - sum of n terms. **(b)**

	(iii)	If $A = \begin{bmatrix} 2 & 3 \\ 5 & 7 \end{bmatrix}$ , $B = \begin{bmatrix} 0 & 4 \\ -1 & 7 \end{bmatrix}$ and $C = \begin{bmatrix} 1 & 0 \\ -1 & 4 \end{bmatrix}$ , find $AC + B^2 - 10C$	[4]
Q.8.	(i)	Using ruler and compass only construct $\angle ABC = 60^{\circ}$ , $AB = 6$ cm and	
		BC = 5 cm.  (a) construct the locus of points equidistant from AB and BC.  (b) construct the locus of points equidistant from A and B.	[5]
			nat
	(iii)	<ul> <li>(d) Hence construct a circle with centre I and passage</li> <li>A(a, b), B(-4, 3) and C(8, -6) are the vertices of ΔABC. Point D is on BC such the BD: DC is 2:1 and M (6, 0) is the mid point of AD. Find:</li> <li>(a) coordinates of point D</li> </ul>	[5]
		A)	
		(c) equation of a line passing through M and perpendicular to line BC.	[3]
Q.9.	(i)	Solve the following inequation and write the solution set:	Į,
	7 8	$13x - 5 < 15x + 4 < 7x + 12, x \in \mathbb{R}$	
		Represent the solution set on a real number line.	6.1
	(ii)	Solve the quadratic equation $x^2 - 3(x+3) = 0$ , give your answer correct to two significant figures.	[3]
		significant rightes.	b

(iii) The sum of the first three terms of an A.P. is 42 and the product of the first and the third term is 52. Find the first term and the common difference. [4]

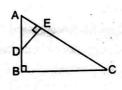
Q.10. (i) If y is mean proportional between x and z prove that:  $xyz (x+y+z)^3 = (xy + yz + zx)^3.$ [3]

(ii) If  $X = \begin{bmatrix} 4 & 1 \\ -1 & 2 \end{bmatrix}$ , show that  $6X - X^2 = 9I$ , where I is the unit matrix of order 2. [3]

(iii) ABC is a right angled triangle with ABC = 90°, D is any point on AB and DE is perpendicular to AC. Prove that:
 (a) ΔADE ~ ΔACB

(b) If AC = 13, BC = 5 cm and AE = 4 cm. Find the lengths of DE and AD.

(c) Find, area of ΔADE: area of quadrilateral BCED.



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