Marking Scheme Class X Session 2024-25

MATHEMATICS STANDARD (Code No.041) (FOR VISUALLLY IMPAIRED)

TIME: 3 hours MAX.MARKS: 80

Q.No.	Section A	Marks
1.	D) -6,6	1
2.	B) -5	1
3.	D) From a point inside a circle only two tangents can be drawn.	1
4.	A) 7	1
5.	B) 20 cm	1
6.	A) $\frac{11}{9}$	1
7.	C) 2	1
8.	B) 8x ² - 20	1
9.	C) 30	1
10.	B) 12 cm	1
11.	A) Irrational and distinct	1
12.	C) $\frac{3}{\sqrt{3}}$	1
13.	B) $\frac{594}{7}$	1
14.	B) $\frac{3}{8}$	1
15.	B) (-4, 0)	1
16.	A) median	1
17.	C) (3,0)	1
18.	D) $\frac{3}{26}$	1
19.	B)	1
20.	D)	1

	Section B								
21. (A)	$480 = 2^{5} \times 3 \times 5$ $720 = 2^{4} \times 3^{2} \times 5$	½ ½							
	LCM $(480,720) = 2^5 \times 3^2 \times 5 = 1440$	1/2							
	HCF $(480, 720) = 2^4 \times 3 \times 5 = 240$								
	OR								
(B)	85 = 5x17, 238 = 2x7x17 HCF(85, 238) = 17	1							
	17 = 85xm -238 m = 3	1							
22.(A)	Total number of possible outcomes = $6x6=36$ For a product to be odd, both the numbers should be odd. Favourable outcomes are $(7,7)$ $(7,9)$ $(7,11)$ $(9,7)$ $(9,9)$ $(9, 11)$ $(11,7)$ $(11,9)$ $(11,11)$ no. of favourable outcomes = 9 P (product is odd) = $\frac{9}{36}$ Or $\frac{1}{4}$	1/ ₂ 1 1/ ₂							
	OR								
(B)	Total number of three-digit numbers = 900. Numbers with hundredth digit 8 & and unit's digit 5 are 805,815, 825,,895 Number of favourable outcomes = 10 P(selecting one such number) = $\frac{10}{900}$ Or $\frac{1}{90}$	½ 1 ½							
23.	$2 \left(\frac{\sqrt{3}}{2}\right)^2 - \left(\frac{1}{\sqrt{2}}\right)^2$	1 ½							
	$\frac{2 \left(\frac{\sqrt{3}}{2}\right)^2 - \left(\frac{1}{\sqrt{3}}\right)^2}{\left(\sqrt{2}\right)^2}$ $= \frac{7}{12}$	1/2							
24	Let the required point be (x,0)	1/2							
	$\sqrt{(8-x)^2 + 25} = \sqrt{41}$ => $(8-x)^2 = 16$ => $8 - x = \pm 4$ => $x = 4$, 12 Two points on the x-axis are (4.0) 8, (12.0)	1/2							
	Two points on the x-axis are (4,0) & (12,0).	<u> </u>							

25.	$AB = \sqrt{(3+5)^2 + (0-6)^2} = 10$	1/2						
	BC = $\sqrt{(9-3)^2 + (8-0)^2}$ = 10 AC = $\sqrt{(9+5)^2 + (8-6)^2}$ = $10\sqrt{2}$	1/2						
		1/2						
	Since AB = BC, therefore \triangle ABC is isosceles							
	Section C							
26.(A)	E G F B							
	Join AC, meeting EF in G. In \triangle ADC, $\frac{AE}{ED} = \frac{AG}{GC} \text{ (EG DC)(1)}$ In \triangle ABC,	1						
	$\frac{AG}{GC} = \frac{BF}{FC} (GF \parallel AB)(2)$	1						
	From equations (1) and (2) ,we get							
	$\frac{AE}{ED} = \frac{BF}{FC}$	1						
	OR							
(B)	Given, $\triangle ABC \sim \triangle DEF$ $\therefore \frac{AB}{DE} = \frac{BC}{EF} = \frac{CA}{DF}$	1						
	$\Rightarrow \frac{4}{6} = \frac{BC}{9} = \frac{CA}{12}$	1						
	∴ BC = 6 cm and CA = 8 cm Perimeter of \triangle ABC = 4 + 6 + 8 = 18 cm	1						

		1
27.	Let the numbers be x and 18-x.	1/2
	$\frac{1}{x} + \frac{1}{18 - x} = \frac{9}{40}$	1
	$=> 18 \times 40 = 9 \times (18 - x)$ $=> x^2 - 18 x + 80 = 0$	
	=> (x-10)(x-8) = 0	1
	=> x=10, 8.	
	=> $18-x=8$, 10 Hence two numbers are 8 and 10.	1/2
28.	From given polynomial $\alpha + \beta = \frac{5}{6}$, $\alpha\beta = \frac{1}{6}$	1
		1
	$\alpha^2 + \beta^2 = (\frac{5}{6})^2 - 2 \times \frac{1}{6} = \frac{13}{36}$	
	$a + a^2 \rho^2 $ $c^1 y^2 = 1$	1/2
	And $\alpha^2 \beta^2 = (\frac{1}{6})^2 = \frac{1}{36}$	
	=> 2 13 1	
	$x^2 - \frac{13}{36}x + \frac{1}{36}$ $\Rightarrow \text{ Required polynomial is } 36x^2 - 13x + 1$	1/2
	\rightarrow Required polynomial is $30x^2 - 13x + 1$	
29.	$(\cos\theta + \sin\theta)^2 + (\cos\theta - \sin\theta)^2 = 2(\cos^2\theta + \sin^2\theta) = 2$	1 ½
	$=> (1)^{2} + (\cos\theta - \sin\theta)^{2} = 2$ $=> (\cos\theta - \sin\theta)^{2} = 1$	1
	$= \cos\theta - \sin\theta = \pm 1$	1/2
30.(A)	Angle described by minute hand in 5 min = 30°. Length of minute hand =18 cm = r.	
	Area swept by minute hand in 35 minutes	
	$= \left(\frac{22}{7} \times 18 \times 18 \times \frac{30}{360}\right) \times 7$ $= 594 cm^2.$	2
	= 594 <i>cm</i> OR	1
(B)	Angle subtended by minor arc=360°-300°=60°	1
	Area of minor arc= $\frac{60^{\circ}}{360^{\circ}}$ x 3.14x 6 x 6	
	$= 18.84 \text{cm}^2$	2
0.4		
31.	Let $\sqrt{3}$ be a rational number.	1/2
	$\therefore \sqrt{3} = \frac{p}{q}, \text{ where } q \neq 0 \text{ and let p & q be co-prime.}$	1
	$3q^2 = p^2 \Rightarrow p^2$ is divisible by $3 \Rightarrow p$ is divisible by $3 \rightarrow p = 3a$, where 'a' is some integer	
	$9a^2 = 3q^2 \Rightarrow q^2 = 3a^2 \Rightarrow q^2$ is divisible by $3 \Rightarrow q$ is divisible by $3 \Rightarrow q$.	1

	(i) and (ii) leads to contradiction as 'p' and 'q' are co-prime.	1/2					
	Section D						
32.(A)	Let the monthly incomes of A and B be ₹ 8x and ₹ 7x respectively and the expenditures of A and B be ₹ 19y and ₹ 16y respectively. A.T.Q. 8x - 19y = 2500(1)						
	7x – 16y = 2500(2) Solving equations (1) and (2), we get	1					
	x = 1500	1					
	 ∴ Monthly income of A = 8 x 1500 = 12000 and monthly income of B = 7 x 1500 = 10500 ∴ Monthly incomes of A and B are ₹12000 and ₹ 10500 respectively. 	1					
	OR						
(B)	Let car I starts from A with speed x km/hr and car II Starts from B with speed y km/hr (x>y)						
	Case I- when cars are moving in the same direction. Distance covered by car I in 9 hours = 9x. Distance covered by car II in 9 hours = 9y Therefore 9 (x-y) = 180 => x-y= 20						
	Case II- when cars are moving in opposite directions.	2					
	Distance covered by Car I in 1 hour = x Distance covered by Car II in 1 hour = y						
	Therefore x + y=180 (ii) Solving (i) and (ii) we get, x=100 km/hr, y=80 km/hr.	2					
33.	Correct given, to prove, construction, figure	1					
	Correct proof	2					
	$ \begin{array}{c} A \\ P \\ Q \\ R \end{array} $ C						
	BP=BR and CQ=CR (tangent from B and C)	1/2					

	AB=AC AB-AP=AC-AP AB-AP=AC-AQ (as AP=AQ) ⇒BP=CQ ⇒BR=CR (as CQ=CR) Hence, BC is bisected at the point of contact.				
34.	Let A be the eye level & B, C are positions of balloon Distance covered by balloon in 12 sec = $3x12 = 36$ m BC = GF = 36 m tan $60^0 = \sqrt{3} = \frac{h}{x}$ => $h = x\sqrt{3}$ (i) tan $30^0 = \frac{1}{\sqrt{3}} = \frac{h}{x+36}$ => $h = \frac{x+36}{\sqrt{3}}$ (ii) Solving (i) and (iii) $h = 18\sqrt{3} = 31.14$ m Height of balloon from ground = $1.35 + 31.14 = 32.49$ m	Correct figure 1 mark			

35.	_									Correct
	Class		х	x f			$u = \frac{x - 102.5}{5}$	fu	cf	table 2marks
		85-90	87.5	87.5			-3	-45	15	
	<u> </u>	90-95	92.5		22		-2	-44	37	
	95-100		97.5	97.5			-1	-20	57	
	100-105		102.5	102.5			0	0	75	
	105-110		107.5		20		1	20	95	
	110-115		112.5		25		2	50	120	
					$\Sigma f =$	120		$\Sigma fu = -39$		
	Mea	$an = \overline{x} = 10$	125-51	, 39						
		= 10	0.875							1 1/2
	Med	dian class	s 100-10)5						
	Med	dian = 100	$+\frac{5}{18}$ (60	-57)	= 100	.83				1/2
							OR			1
				Т						
	Monthly Expendi		f_i	Xi		fixi				Correct
	1000-1500 24		24	125	50	30,00	0			table
	1500-2000 4		40	175		70,00				2marks
			33	225						
	2500-		X=28	275						
			30 22	325						
	4000-4		<u>16</u>	375 425		82,50 68,00				
	4500-5		7	475		33,25				
	172	+x=200								1
	X=2 Mea	F22F00	<u>)</u>							1
	IVIC	= 2662.5	, ,							1
					Se	ection E				
36.(i)								½ ½		
(ii)	34 = 3+ (n-1)3									

	=> n = $34/3 = 11\frac{1}{3}$ which is not a positive integer.	1/2							
	Therefore, it is not possible to have 34 jars in a layer if the given pattern is continued.								
(iii)(A)									
	$S_n = \frac{n}{2} [2x3 + (n-1)3]$	1/2							
	$S_n = \frac{n}{2} [2x3 + (n-1) 3]$ = $\frac{n}{2} [6 + 3n-3]$	1							
	$=\frac{n}{2}[3+3n]$								
	$=\frac{3}{3}\frac{n}{2}[1+n]$	1/2							
	$s_8 = 3 \times \frac{8}{2} (1+8)$ = 108								
	= 106 OR								
(iii) (B)	A.P will be 6, 9, 12,	1/2							
	a= 6, d=3	1							
	$t_5 = 6 + (5-1)3$ = 6 + 12	1/2							
	= 6 + 12 = 18	72							
	_ 10								
37. (i)	$\frac{h1}{20} = \frac{50}{10} \text{(where } h1 = \text{height of tower)}$	1/2							
		1/2							
	height of tower,h1= 100m	1/2							
(ii)	20 10								
	height of student's house, $h2 = 40$ m								
(:::\ A\	$\frac{l1}{12} = \frac{100}{20}$ (where $l1 = length$ of the shadow of the tower)								
(iii) A)	$\frac{12}{20}$ (where $t1 = \text{length of the shadow of the tower)}$								
	length of the shadow of the tower, $l1$ =60m								
	OR								
	l2 40 (1 12 14 14 14 14 14 14 14 14 14 14 14 14 14								
(iii) (B)	$\frac{l2}{40} = \frac{40}{100}$ (where $l2$ = length of the shadow of Student's house)	1							
	longth of the chadow of Student's house 12-16m								
	length of the shadow of Student's house, l2=16m	1							
38. (i)	$I = \sqrt{r^2 + h^2}$								
	$=\sqrt{(1.5)^2+(2)^2}$	1/2							
	$=\sqrt{2.25 + 4}$	/2							
	$= \sqrt{6.25}$ = 2.5 m								

(ii)		
	CSA of cone = ∏rl	1/2
	$=\frac{22}{7} \times 1.5 \times 2.5$	1/2
	$= 11.78 m^2$,,,
(iii) (A)	CCA of culinder. Off the	
	CSA of cylinder = 2π rh = $2 \times \frac{22}{7} \times 1.5 \times 7$	1
	$= 2 \times \frac{1}{7} \times 1.3 \times 7$ $= 66 m^2$	
	$= 66 m^{2}$ Cost of metal sheet used = 66×2000	1
	= ₹1,32,000	'
(iii) (B)	OR Volume of cylinder = Πr^2 h	
(, (=)	$= \frac{22}{7} \times (1.5)^2 \times 7$	
	$= \frac{1}{7} \times (1.3) \times 7$ $= 49.5 m^3$	1/2
	Volume of cone = $\frac{1}{3} \pi r^2$ h	
		_
	$= \frac{1}{3} \times \frac{22}{7} \times (1.5)^2 \times 2$	1
	$= 4.71 m^3$	
	Total capacity = $49.5 + 4.71 = 54.21 m^3$	1/2