

**DIRECTORATE OF GOVERNMENT EXAMINATIONS, CHENNAI-6**

**SSLC PUBLIC EXAMS MARCH / APRIL - 2025**

**KEY ANSWER FOR MATHEMATICS (ENGLISH MEDIUM)**

**MARKING SCHEME – KEY ANSWERS**

**MAXIMUM MARKS:100**

**GENERAL INSTRUCTIONS**

1. If a student has given any answer which is different from one given in this marking scheme, but arrives with correct answer, should be given full credit with appropriate distribution.
2. In section I, award 1 mark for the correct option code and the corresponding answer. If one of them (Option or Answer) is wrong then award ZERO mark only.
3. In Section II, Section III, Section IV if the solution is correct then award full mark directly. The Stage mark is essential only if the part of the solution is incorrect.
4. If the formula is written correctly and there is a mistake in certain steps then mark should be awarded for the formula. Full marks should be awarded if the formula is incorrect, the steps are correctly written and the answer is correct. Marks should not be deducted for wrongly written formula

## PART-I

Answer all Questions

14×1=14

Q.No	Option Code	Key Answer	Marks Allotted
1.	(c)	{4,9,25,49,121}	1
2.	(a)	$m^n$	1
3.	(c)	$0 \leq r < b$	1
4.	(a)	0	1
5.	(b)	5	1
6.	(d)	Row matrix	1
7.	(b)	Point of Contact	1
8.	(d)	$7x-3y=0$	1
9.	(b)	1	1
10.	(d)	$60^\circ$	1
11.	(d)	$136\pi \text{ cm}^2$	1
12.	(a)	$\frac{4}{3}\pi$	1
13.	(a)	$P(A)>1$	1
14.	(d)	$\frac{4}{5}$	1

## PART – II

Answer any Ten Questions

Q.No : 28 is Compulsory

10×2=20

Q. NO	ANSWERS	Step Marks	Total Marks
15	$A = \{1,2,3\}, B = \{2,3,5,7\}$ $A \times B = \{(1,2)(1,3)(1,5)(1,7)(2,2)(2,3)(2,5)(2,7)(3,2)(3,3)(3,5)(3,7)\}$	1  1	2
16	$f \circ g = 2(x^2-2)+1$ (or) $2x^2-3$ $g \circ f = (2x+1)^2-2$ (or) $4x^2+4x-1$	1  1	2

17	$a=bq+r$ (or) $532 = 21(25) + 7$ Number of completed rows = 25 Number of remaining flower pots = 7 <b>Note:-</b> Full marks should be awarded even if answers are given in alternative methods.	1  1	2
18	$\frac{x^3}{x-y} - \frac{y^3}{x-y}$ (or) $\frac{x^3-y^3}{x-y}$ $= x^2+xy+y^2$	1  1	2
19	$AB = \begin{pmatrix} 5 & 3 \\ 5 & 9 \end{pmatrix}$ $BA = \begin{pmatrix} 4 & 2 \\ 5 & 10 \end{pmatrix}$ $AB \neq BA$	1  1	2
20	$\frac{AB}{AC} = \frac{BD}{DC}$ $AC = \frac{9}{2}$ cm (or) 4.5 cm	1  1	2
21	Slope, $m = \frac{y_2-y_1}{x_2-x_1}$ $a = \frac{17}{2}$ (or) 8.5	1  1	2
22	$m_1 = \frac{1}{2}, \quad m_2 = -2$ $m_1 \times m_2 = -1$ (or) Two straight lines are perpendicular	1  1	2
23	$\tan \theta = \frac{Opp.Side}{Adj.Side}$ (or) $\frac{1}{\sqrt{3}} = \frac{50\sqrt{3}}{x}$ $x = 150$ m	1  1	2
24	Volume of the Sphere $= \frac{4}{3}\pi r^3$ $V_1:V_2 = \frac{4}{3}\pi(4)^3 : \frac{4}{3}\pi(7)^3 = 64 : 343$	1  1	2
25	C.S.A of frustum of a cone $= \pi[R + r]l$ $25\pi$ (or) $\frac{550}{7}$ (or) 78.57 Sq.cm	1  1	2
26	Range = L – S Range = 28 – 18 = 10	1  1	2

27	$n(S) = 200$ $P(A) = \frac{n(A)}{n(S)} = \frac{80}{200} \text{ (or) } \frac{2}{5}$	1 1	2
28	$\sqrt{2}, 2\sqrt{2}, 3\sqrt{2}, 4\sqrt{2}, 5\sqrt{2} \dots$ (or) $t_2 - t_1 = t_3 - t_2 = \sqrt{2}$ (or) Given Sequence is an A.P  Common difference $d = \sqrt{2}$  Note: One mark should be awarded if the formula is correct	1 1	2

### PART – III

Answer any Ten Questions

Q.No : 42 is Compulsory

10×5=50

Q.NO	ANSWERS	Step Marks	Total Marks
29	$A = \{1,2,3,4,5,6,7\}$ $B = \{2,3,5,7\}$ $C = \{2\}$ $A \cap B = \{2,3,5,7\}$ $(A \cap B) \times C = \{(2,2)(3,2)(5,2)(7,2)\}$ $A \times C = \{(1,2)(2,2)(3,2)(4,2)(5,2)(6,2)(7,2)\}$ $B \times C = \{(2,2)(3,2)(5,2)(7,2)\}$ $(A \times C) \cap (B \times C) = \{(2,2)(3,2)(5,2)(7,2)\}$	1 1 1 1 1	5

30	<p><math>f(2) = 0, f(4) = 1, f(6) = 2, f(10) = 4, f(12) = 5</math></p> <p><b>(i) Set of Ordered Pairs</b> <math>f=\{(2,0)(4,1)(6,2)(10,4)(12,5)\}</math></p> <p><b>(ii) Table</b></p> <table><tr><td>x</td><td>2</td><td>4</td><td>6</td><td>10</td><td>12</td></tr><tr><td>f(x)</td><td>0</td><td>1</td><td>2</td><td>4</td><td>5</td></tr></table> <p><b>(iii) An arrow diagram</b></p> <p><b>(iv) a graph</b></p>	x	2	4	6	10	12	f(x)	0	1	2	4	5	1	
x	2	4	6	10	12										
f(x)	0	1	2	4	5										
		1													
		1													
		1	5												
		1													
31	<p><math>113400 = 2^3 \times 3^4 \times 5^2 \times 7^1</math></p> <p><math>p_1 = 2, p_2 = 3, p_3 = 5, p_4 = 7</math></p> <p><math>x_1 = 3, x_2 = 4, x_3 = 2, x_4 = 1</math></p>	1													
		2	5												
		2													
32	<p><math>\sum n^2 = \frac{n(n+1)(2n+1)}{6}</math></p> <p><math>6^2 + 7^2 + 8^2 + \dots + 21^2</math></p> <p><math>= (1^2 + 2^2 + 3^2 + \dots + 21^2) - (1^2 + 2^2 + 3^2 + \dots + 5^2)</math></p> <p><math>= \frac{21 \times 22 \times 43}{6} - \frac{5 \times 6 \times 11}{6}</math></p> <p><math>= 3311 - 55</math></p> <p><math>= 3256</math></p>	1													
		1	5												
		1													
		1													
		1													

33	$AB = \begin{pmatrix} 0 & 9 \\ 5 & -4 \end{pmatrix}$ $(AB)^T = \begin{pmatrix} 0 & 5 \\ 9 & -4 \end{pmatrix}$ $B^T = \begin{pmatrix} 2 & -1 & 0 \\ -1 & -4 & 2 \end{pmatrix}$ $A^T = \begin{pmatrix} 1 & 2 \\ 2 & -1 \\ 1 & 1 \end{pmatrix}$ $B^T A^T = \begin{pmatrix} 0 & 5 \\ 9 & -4 \end{pmatrix}$	1 1 1 1 1	5
34	Statement Diagram Given, To Prove, Construction, Proof <b>Note:-</b> If the diagram is not drawn, marks should be awarded only for the statement.	2 1 2	5
35	Area of the quadrilateral = $\frac{1}{2} \{x_1 y_2 - x_2 y_1 + x_2 y_3 - x_3 y_2 + x_3 y_4 - x_4 y_3 + x_4 y_1 - x_1 y_4\}$ $\frac{1}{2} \begin{vmatrix} -4 & -3 & 3 & 2 \\ -2 & k & -2 & 3 \end{vmatrix} = 28$ $-7k = 35$ $k = -5$ <b>Note:-</b> Full marks should be awarded even if answers are given in alternative methods	1 2 1 1	5
36	$a + b = 7 \Rightarrow b = 7 - a$ $\frac{x}{a} + \frac{y}{b} = 1$ $\frac{x}{a} + \frac{y}{7-a} = 1$ The line passes through the point $(-3, 8)$ , $a^2 + 4a - 21 = 0$ $a = -7$ (or) $a = 3$ $b = 4$ $\frac{x}{3} + \frac{y}{4} = 1$ (or) $4x + 3y - 12 = 0$	1 1  1 1 1	5
37	$= \frac{(\sin A + \cos A)(\sin^2 A - \sin A \cos A + \cos^2 A)}{(\sin A + \cos A)} + \frac{(\sin A - \cos A)(\sin^2 A + \sin A \cos A + \cos^2 A)}{(\sin A - \cos A)}$ $= 1 - \sin A \cos A + 1 + \sin A \cos A$ $= 2$	2 2 1	5

	<b>Note:</b> Two marks should be given, if only the following formulae are written without any answers. $a^3 + b^3 = (a + b)(a^2 - ab + b^2)$ $a^3 - b^3 = (a - b)(a^2 + ab + b^2)$		
38	Volume of the model $= \pi r^2 H + 2 \times \frac{1}{3} \pi r^2 h$ $= \frac{22}{7} \times \left(\frac{3}{2}\right)^2 \times 8 + 2 \times \frac{1}{3} \times \frac{22}{7} \times \left(\frac{3}{2}\right)^2 \times 2$ $= 21\pi \text{ cm}^3 \text{ (or) } 66 \text{ cm}^3$ <p>Note:  1. If the height of the cylinder alone is found, then one mark should be awarded  2. Full marks should be awarded even if answers are given in alternative methods</p>	2 2 1	5
39	Volume of Sphere = $\frac{4}{3} \pi r^3$ Number of small metal spheres = $\frac{\text{Volume of Big Sphere}}{\text{Volume of Small Sph}}$ $= \frac{\frac{4}{3} \pi \times 16 \times 16 \times 16}{\frac{4}{3} \pi \times 2 \times 2 \times 2}$ $= 512$	1 1 2 1	5
40	$\bar{x} = \frac{\sum x}{n}$ $\text{C.V} = \frac{\sigma}{\bar{x}} \times 100\%$ <p>Sathya : <math>\bar{x} = 92</math> , C.V = 5 %  Vidhya : <math>\bar{x} = 96</math> , C.V = 2.5 %  Vidhya's performance is more consistent.</p>	1 1 1 1 1	5
41	n(S) = 26 i) $P(A) = \frac{6}{26}$ (or) $\frac{3}{13}$ ii) $P(B) = \frac{13}{26}$ (or) $\frac{1}{2}$ iii) $P(C) = \frac{20}{26}$ (or) $\frac{10}{13}$ iv) $P(D) = \frac{12}{26}$ (or) $\frac{6}{13}$	1 1 1 1 1	5
42	$(x^2 - 2x + 1) + (x^2 - 4x + 4) + (x^2 - 6x + 9) = 0$ $3x^2 - 12x + 14 = 0$ $\Delta = b^2 - 4ac$ $\Delta = (-12)^2 - 4(3)(14) = 144 - 168$ $\Delta = -24 < 0$ <p>The given equation will have no real roots.</p>	2 1 1 1	5

# PART – IV

Answer all Questions

2×8=16

Q.NO	ANSWERS	Step Marks	Total Marks																																																								
43 (a)	Rough Diagram Drawing a line segment Drawing Circle Drawing the angle bisector Drawing triangle ABC	1 1 3 1 2	8																																																								
(OR)																																																											
43(b)	Rough Diagram Drawing first circle Drawing a line segment of 11 cm from the centre Drawing Second Circle Drawing the two tangents	1 2 2 2 1	8																																																								
44 (a)	X axis , Y axis Scale $y = x^2 - 9x + 20$ (at least any 5 points) <table border="1"><tr><td>x</td><td>-1</td><td>0</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td></tr><tr><td>y</td><td>30</td><td>20</td><td>12</td><td>6</td><td>2</td><td>0</td><td>0</td><td>2</td></tr></table> Plot the points and draw the parabola. The roots are real and unequal.	x	-1	0	1	2	3	4	5	6	y	30	20	12	6	2	0	0	2	1 1  3  2 1	8																																						
x	-1	0	1	2	3	4	5	6																																																			
y	30	20	12	6	2	0	0	2																																																			
(OR)																																																											
44 (b)	X-axis, Y-axis Scale <table border="1"><tr><td>Time</td><td>1hr</td><td>2hrs</td><td>3hrs</td><td>4hrs</td><td>5hrs</td><td>6hrs</td></tr><tr><td>X</td><td>(or) 60 min</td><td>(or) 120 min</td><td>(or) 180 min</td><td>(or) 240 min</td><td>(or) 300 min</td><td>(or) 360 min</td></tr><tr><td>Distance(km)</td><td>50</td><td>100</td><td>150</td><td>200</td><td>250</td><td>300</td></tr><tr><td>Y</td><td></td><td></td><td></td><td></td><td></td><td></td></tr></table> (Or) <table border="1"><tr><td>Distance(km)</td><td>50</td><td>100</td><td>150</td><td>200</td><td>250</td><td>300</td></tr><tr><td>X</td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>Time</td><td>1hr</td><td>2hrs</td><td>3hrs</td><td>4hrs</td><td>5hrs</td><td>6hrs</td></tr><tr><td>Y</td><td>(or) 60 min</td><td>(or) 120 min</td><td>(or) 180 min</td><td>(or) 240 min</td><td>(or) 300 min</td><td>(or) 360 min</td></tr></table> Plot the points and Draw the Straight line  i) 50 (or) $\frac{5}{6}$ (or) $\frac{1}{50}$ (or) $\frac{6}{5}$ ii) 75 km iii) 6 hrs (or) 360 mins	Time	1hr	2hrs	3hrs	4hrs	5hrs	6hrs	X	(or) 60 min	(or) 120 min	(or) 180 min	(or) 240 min	(or) 300 min	(or) 360 min	Distance(km)	50	100	150	200	250	300	Y							Distance(km)	50	100	150	200	250	300	X							Time	1hr	2hrs	3hrs	4hrs	5hrs	6hrs	Y	(or) 60 min	(or) 120 min	(or) 180 min	(or) 240 min	(or) 300 min	(or) 360 min	1 1  2  1  1 1 1	8
Time	1hr	2hrs	3hrs	4hrs	5hrs	6hrs																																																					
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