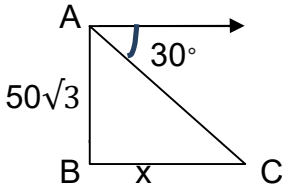


S.S.L.C PUBLIC EXAMS- MAY -2022**KEY ANSWER FOR MATHEMATICS
MARKING SCHEME – KEY ANSWERS
GENERAL INSTRUCTIONS**

1. If a student has given any answer which is different from one given in this marking scheme, but arrives 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 a particular stage is wrong and if the student writes the appropriate formula then suitable mark which is attached with that stage should be awarded for the formula mark should not be deducted for not writing the formula if the student arrives at the correct answer.

S.S.L.C PUBLIC EXAMS- MAY -2022
ANSWER KEY
SUBJECT: MATHEMATICS MEDIUM : ENGLISH

Part-I (14 × 1 = 14)			
Q.NO.	KEY ANSWERS		MARKS ALLOTTED
1	d	(3,-2)	1
2	b	2	1
3	d	7 nd	1
4	b	5	1
5	b	$16x^2$	1
6	b	1	1
7	d	$5\sqrt{2}$ cm	1
8	b	4 cm	1
9	c	9	1
10	b	1	1
11	b	43.92 m	1
12	a	$4\pi r^2$ sq.units	1
13	b(or)c	3 (or) 4	1
14	b	1	1
Part-II (10 × 2 = 20)			
[Q.NO.28- COMPULSORY]			
Q.NO.	KEY ANSWERS		MARKS ALLOTTED
15	A={1,2,3} , B={2,3,5,7} $AXB = \{(1,2),(1,3),(1,5),(1,7),(2,2),(2,3),(2,5),(2,7),$ $(3,2),(3,3),(3,5),(3,7)\}$ $BXA= \{(2,1),(2,2),(2,3),(3,1),(3,2),(3,3),(5,1),(5,2)$ $(5,3),(7,1),(7,2),(7,3)\}$		1 2
16	i) Set builder form $R = \{(x, y)/y=x-2, x \in P, y \in Q\}$ ii) Roster form $R = \{(5,3),(6,4),(7,5)\}$		1 2

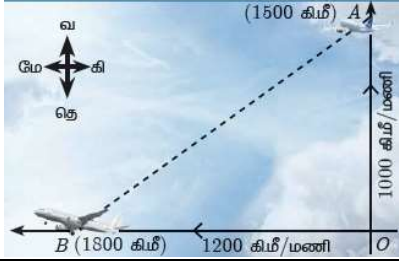
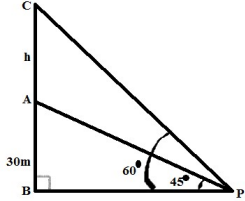
17	$13824 = 2^9 \times 3^3$ $a = 9; b = 3$	1 1	2
18	$n = \frac{l-a}{d} + 1$ (or) $t_n = a + (n-1)d$ $n = 15$	1 1	2
19	$8p^2 + 13p + 5 = 0$ $8p+5=0; p+1=0$ Excluded Values = $-\frac{5}{8}$ மற்றும் -1	1 1	2
20	$\frac{BD}{DC} = \frac{AB}{AC}$ (OR) $\frac{4}{3} = \frac{6}{AC}$ $AC = \frac{9}{2} = 4.5 \text{ cm}$	1 1	2
21	$\text{Area of } \Delta PQR = \frac{1}{2} \begin{vmatrix} x_1 & x_2 & x_3 & x_1 \\ y_1 & y_2 & y_3 & y_1 \end{vmatrix} \text{ Sq.units}$ (or) $= \frac{1}{2} \begin{vmatrix} -1.5 & 6 & -3 & -1.5 \\ 3 & -2 & 4 & 3 \end{vmatrix}$ $= 0 \text{ Sq.units}$ $\therefore$ The given points P, Q, R are collinear.	1 1	2
22	$\text{Slope of } p, m_1 = \frac{2}{3}$ $\text{Slope of } q, m_2 = \frac{2}{3}$ $m_1 = m_2$, p is parallel to q	1 1	2
23	$y - y_1 = m(x - x_1)$ $5x + 4y - 3 = 0$	1 1	2
24	 $\tan 30^\circ = \frac{AB}{BC}$ (OR) $\tan 30^\circ = \frac{50\sqrt{3}}{x}$ Distance = 150 m	1 1	2
25	Surface area of a sphere = $4\pi r^2$ Sq.units Ratio of Surface area = 9:16	1 1	2
26	Volume of a cone = $\frac{1}{3}\pi r^2 h$ cu.units $V_1 : V_2 = \frac{1}{3}\pi r^2 h_1 : \frac{1}{3}\pi r^2 h_2 = 3600 : 5040$ $h_1 : h_2 = 5:7$	1 1	2

27	$S = \{HH, HT, TH, TT\}$ (or) $n(s) = 4$ $P(A) = \frac{2}{4} = \frac{1}{2}$	1 1	2
28	$\left. \begin{aligned} P + Q &= \frac{x+y}{x+y} \\ P - Q &= \frac{x-y}{x+y} \end{aligned} \right\}$ $\frac{1}{P^2 - Q^2} = \frac{1}{(P+Q)(P-Q)} = \frac{x+y}{x-y}$	1 1	2

Part-III
(Q.NO.42- COMPULSORY)

(10 × 5 = 50)

Q.NO.	KEY ANSWERS	MARKS ALLOTTED	
29	$B-C = \{3, 5, 7\}$ $AX(B-C) = \{(1, 3), (1, 5), (1, 7), (2, 3), (2, 5), (2, 7),$ $(3, 3), (3, 5), (3, 7), (4, 3), (4, 5), (4, 7),$ $(5, 3), (5, 5), (5, 7), (6, 3), (6, 5), (6, 7),$ $(7, 3), (7, 5), (7, 7)\}$ $AXB = \{(1, 2), (1, 3), (1, 5), (1, 7), (2, 2), (2, 3), (2, 5), (2, 7),$ $(3, 2), (3, 3), (3, 5), (3, 7), (4, 2), (4, 3), (4, 5), (4, 7),$ $(5, 2), (5, 3), (5, 5), (5, 7), (6, 2), (6, 3), (6, 5), (6, 7),$ $(7, 2), (7, 3), (7, 5), (7, 7)\}$ $AXC = \{(1, 2), (2, 2), (3, 2), (4, 2), (5, 2), (6, 2), (7, 2)\}$ $(AXB) - (AXC) = \{(1, 3), (1, 5), (1, 7), (2, 3), (2, 5), (2, 7),$ $(3, 3), (3, 5), (3, 7), (4, 3), (4, 5), (4, 7),$ $(5, 3), (5, 5), (5, 7), (6, 3), (6, 5), (6, 7),$ $(7, 3), (7, 5), (7, 7)\}$ $AX(B-C) = (AXB) - (AXC)$ Verified.	1 1 1 1 1 1	5
30	$t_n = a + (n - 1)d$ $\left. \begin{aligned} x &= a + (l - 1)d \\ y &= a + (m - 1)d \\ z &= a + (n - 1)d \end{aligned} \right\}$ (i) $x(m - n) + y(n - l) + z(l - m)$ $= a(0) + d(0) = 0$ (ii) $\left. \begin{aligned} x - y &= (l - m)d \\ y - z &= (m - n)d \\ z - x &= (n - l)d \end{aligned} \right\}$ $(x - y)n + (y - z)l + (z - x)m = 0$	1 1 1 1 1	5
31	$t_n = a + (n - 1)d$ $a + 5d : a + 7d = 7 : 9$ $a = 2d$ $t_9 : t_{13} = a + 8d : a + 12d$ $= 5 : 7$	1 1 1 1 1	5

36	 Distance travel by first aeroplane $OA = 1500 \text{ km}$ Distance travel by Second aeroplane $OB = 1800 \text{ km}$ In right angled triangle OAB $AB^2 = OA^2 + OB^2 = 1500^2 + 1800^2$ $AB = 300\sqrt{61} \text{ kms}$	1 1 1 2	5
37	mid point of ABP $(\frac{1}{2}, \frac{-3}{2})$ mid point of BCQ $(\frac{11}{2}, \frac{4}{2})$ mid point of CDR $(\frac{-1}{2}, \frac{11}{2})$ mid point of ADS $(\frac{-1}{2}, \frac{4}{2})$ Slope of PQ = $\frac{7}{10}$ Slope of RS = $\frac{7}{10}$ Slope of QR = $\frac{-7}{12}$ Slope of PS = $\frac{-7}{12}$ PQ , RS are parallel and QR , PS are parallel PQRS is a Parallelogram Note : Mid point and Slope formula may be allotted marks	2 2 1	5
38	 In right angled triangle ABP $\tan 45^\circ = \frac{AB}{BP} \Rightarrow BP = 30m$ In right angled triangle CBP $\tan 60^\circ = \frac{BC}{BP} \Rightarrow BP = \frac{30 + h}{\sqrt{3}}m$ $\frac{30 + h}{\sqrt{3}} = 30$ Height of the tower $h = 21.96 m$	1 1 1 1	5

39	Volume = $\frac{\pi h}{3} (R^2 + r^2 + Rr)$ cu.units $= \frac{1}{3} \times \frac{22}{7} \times 16 (20^2 + 8^2 + 20 \times 8)$ $= 10459.43$ cu.cm $= 10.459$ litres Total cost of milk = Rs. 418 . 36	1 1 1 1 1	5
40	volume of a cylinder = $\pi r^2 h$ cu.unit volume of a cone = $\frac{1}{3} \times \pi r^2 h$ cu.unit volume of the model = $\pi r^2 h + 2 \left(\frac{1}{3} \times \pi r^2 h \right)$ $= 56.57 + 9.42$ volume of the model = 66 cu.cm	1 1 2 1	5
41	$\left. \begin{aligned} n(S) &= 50 \\ P(A) &= \frac{28}{50} \\ P(B) &= \frac{30}{50} \\ P(A \cap B) &= \frac{18}{50} \end{aligned} \right\}$ i) $P(A \cap \bar{B}) = \frac{10}{50} = \frac{1}{5}$ ii) $P(\bar{A} \cap B) = \frac{12}{50} = \frac{6}{25}$ iii) $P[(A \cap \bar{B}) \cup (\bar{A} \cap B)] = \frac{11}{25}$ Note :- If answered (i) and (ii) correctly then to be given five marks	2 1 1 1	5
42	$a = b + 5$ $\frac{x}{a} + \frac{y}{b} = 1$ $b^2 - 11b + 30 = 0$ $b = 5, b = 6$ Equation of the straight lines $x + 2y - 10 = 0$ and $6x + 11y - 66 = 0$	1 1 1 1 1	5

Part-IV		(2 × 8 = 16)																	
Q.NO.	KEY ANSWERS	MARKS ALLOTTED																	
43.a)	Rough Diagram	1	8																
	Drawing a line segment	1																	
	Drawing circle	3																	
	Marking Altitude	1																	
	Construction of ΔABC	2																	
	(or)																		
b)	Rough Diagram	1	8																
	Drawing first circle	2																	
	Drawing the Second circle	3																	
	Drawing the Two Tangents	1																	
	Length of tangent = 4 cm	1																	
44.a)	x axis , y axis,	1	8																
	Scale	1																	
	$y = x^2 - 4x + 3$ (Any 5 points)																		
	<table><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></tr><tr><td>Y</td><td>8</td><td>3</td><td>0</td><td>-7</td><td>0</td><td>3</td><td>8</td></tr></table>	X		-1	0	1	2	3	4	5	Y	8	3	0	-7	0	3	8	2
	X	-1		0	1	2	3	4	5										
	Y	8		3	0	-7	0	3	8										
	Plot the points and Draw the parabola	1																	
	$y = 2x - 6$																		
	<table><tr><td>x</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td></tr><tr><td>y</td><td>-4</td><td>-2</td><td>0</td><td>2</td><td>4</td></tr></table>	x		1	2	3	4	5	y	-4	-2	0	2	4	1				
	x	1		2	3	4	5												
	y	-4		-2	0	2	4												
Drawing straight line	1																		
Solution : $x = 3, 3$	1																		
(Or)																			
b)	x axis , y axis,	1	8																
	Scale	1																	
	$y = x^2 - 4x + 4$ (Any 5 points)																		
	<table><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></tr><tr><td>y</td><td>9</td><td>4</td><td>1</td><td>0</td><td>1</td><td>4</td><td>9</td></tr></table>	X		-1	0	1	2	3	4	5	y	9	4	1	0	1	4	9	3
	X	-1		0	1	2	3	4	5										
	y	9		4	1	0	1	4	9										
	Plot the points and Draw the parabola	2																	
	Nature of Solution : The roots are Real and Equal.	1																	