S.S.L.C PUBLIC EXAMS- MAY -2022

KEY ANSWER FOR MATHEMATICS

MARKING SCHEME – KEY ANSWERS

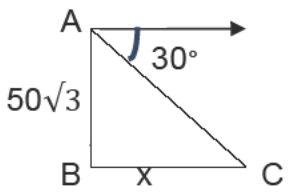
GENERAL INSTRUCTIONS

1. If 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			$(14 \times 1 = 14)$
Q.NO.	**KEY ANSWERS**		**MARKS ALLOTED**
1	d	(3,-2)	1
2	b	2	1
3	d	7nd	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 **[Q.NO.28- COMPULSORY]**			$(10 \times 2 = 20)$
Q.NO.	**KEY ANSWERS**	**MARKS ALLOTED**	
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,),(7,2),(7,3)}	1 1	2
16	i) Set builder form R = {(x, y)/y=x-2,x∈P, y∈Q} ii) Roster form R = {(5,3),(6,4),(7,5)}	1 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 1	2
20	$\frac{BD}{DC} = \frac{AB}{AC}$ (OR) $\frac{4}{3} = \frac{6}{AC}$ AC = $\frac{9}{2}$ =4.5 cm	1 1	2
21	Area of $\Delta PQR = \frac{1}{2}\{\begin{matrix} x_1 & x_2 & x_3 & x_1 \\ y_1 & y_2 & y_3 & y_1 \end{matrix}\}$ Sq.units **(or)** $= \frac{1}{2}\{\begin{matrix} -1.5 & 6 & -3 & -1.5 \\ 3 & -2 & 4 & 3 \end{matrix}\}$ $= 0$ Sq.units ∴ The given points P,Q, R are collinear.	1 1	2
22	Slope of p , $m_1 = \frac{2}{3}$ 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° = $\frac{AB}{BC}$ (OR) $tan30^\circ = \frac{50\sqrt{3}}{x}$ 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

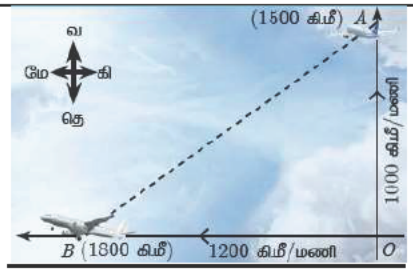
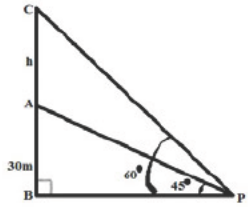
27	S={HH,HT,TH,TT} $(or)\ n(s) = 4$ P(A)= $\frac{2}{4} = \frac{1}{2}$	1 1	2
28	$P + Q = \frac{x+y}{x+y}$ $P - Q = \frac{x-y}{x+y}$ $\frac{1}{P^2-Q^2} = \frac{1}{(P+Q)(P-Q)} = \frac{x+y}{x-y}$	1 1	2

Part-III $(10 \times 5 = 50)$

(Q.NO.42 COMPULSORY)

Q.NO.	KEY ANSWERS	MARKS ALLOTED	
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**	**5**
30	$t_n = a + (n-1)d$ $x = a + (l-1)d$ $y = a + (m-1)d$ $z = a + (n-1)d$ (i) $x(m-n) + y(n-l) + z(l-m)$ $= a(0) + d(0) = 0$ (ii) $x - y = (l-m)d$ $y - z = (m-n)d$ $z - x = (n-l)d$ $(x-y)n + (y-z)l + (z-x)m = 0$	**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**

32	$6x^2-5x+3$ $6x^2$ | $36x^4 - 60x^3 + 61x^2 - mx + n$ $36x^4$ (-) $12x^2-5x$ | $-60x^3 + 61x^2$ $-60x^3 + 25x^2$ (+) (-) $12x^2-10x+3$ | $36x^2 - mx + n$ $36x^2-30x+9$ 0 m =30 n=9	**1** **1** **1** **1** **1**	**5**
33	$a = pq;\ b = -(p+q)^2;\ c = (p+q)^2$ $x = \frac{-b \pm \sqrt{b^2-4ac}}{2a}$ $= \frac{-[-(p+q)^2] \pm \sqrt{[-(p+q)^2]^2 - 4(pq)(p+q)^2}}{2pq}$ $x = \frac{p+q}{q},\ \frac{p+q}{p}$	**1** **1** **1** **2**	**5**
34	$\alpha+\beta = \frac{-a}{7};\ \alpha\beta = \frac{2}{7}$ $(\alpha-\beta)^2 = (\alpha+\beta)^2 - 4\alpha\beta$ $a^2 = 225$ $a = 15,\ a = -15$	**1** **1** **2** **1**	**5**
35	Statement Figure Given , To prove , Construction Proof **Note :- If No figure then only marks allotted for statement**	**1** **1** **1** **2**	**5**

36	 Distance travel by first aeroplaneOA = 1500 km Distance travel by Second aeroplane OB = 1800 km In right angled triangle OAB $AB^2 = OA^2 + OB^2 = 1500^2 + 1800^2$ $AB = 300\sqrt{61}$kms	1 1 1 2	**5**
37	mid point of ABP $(\frac{1}{2}, \frac{-}{2})$ 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 $= \frac{-7}{12}$ S ope of PS $= \frac{-7}{12}$ PQ , RS are parallel and QR , PS are parallel PQRSis a Parallelogram **Note : Mid point and Slope formula may be alloted marks**	2 2 1	**5**
38	 In right angled triangleABP $tan45^\circ = \frac{AB}{BP} \Rightarrow BP = 30m$ In right angled triangle CBP $tan60^\circ = \frac{BC}{BP} \Rightarrow BP = \frac{30+h}{\sqrt{3}} m$ $\frac{30+h}{\sqrt{3}} = 30$ Height of the tower$h = 21.96\ m$	1 1 1 1 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	$n(S) = 50$ $P(A) = \frac{28}{50}$ $P(B) = \frac{30}{50}$ $P(A \cap B) = \frac{18}{50}$ $i)\ P(A \cap \overline{B}) = \frac{10}{50} = \frac{1}{5}$ $ii)\ P(\overline{A} \cap B) = \frac{12}{50} = \frac{6}{25}$ $iii)\ P[(A \cap \overline{B}) \cup (\overline{A} \cap B)] = \frac{11}{25}$ **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 $(2 \times 8 = 16)$

Q.NO.	KEY ANSWERS	MARKS ALLOTED	
43.a)	Rough Diagram	1	
	Drawing a line segment	1	
	Drawing circle	3	
	Marking Altitude	1	8
	Construction of ΔABC	2	
	(or)		
b)	Rough Diagram	1	
	Drawing first circ e	2	
	Drawing the Second circle	3	
	Drawing the Two Tangents	1	8
	Length of tangent = 4 cm	1	
44.a)	x axis , y axis,	1	
	Scale	1	
	$y = x^2 - 4x + 3$(Any 5 points)		

X	-1	0	1	2	3	4	5
Y	8	3	0	-7	0	3	8

	Plot the points and Draw the parabola	2	8
	$y = 2x - 6$		

x	1	2	3	4	5
y	–4	2	0	2	4

	Drawing s raight line	1	
	Solution : $x = 3\,, 3$	1	
	(Or)		
b)	x axis , y axis,	1	
	Scale	1	
	$y = x^2 - 4x + 4$(Any 5 points)		

X	–1	0	1	2	3	4	5
y	9	4	1	0	1	4	9

	Plot the points and Draw the parabola	2	8
	Nature of Solution : The roots are Real and Equal.	1	

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