DIRECTORATE OF GOVERNMENT EXAMINATIONS, CHENNAI-6

SSLC EXAMINATIONS, MARCH 2017

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.

Directorate of Government Examinations, Chennai – 6

SSLC Public Examination – March 2017

Mathematics – Answer Key

Total Marks : 100

Section - I

(Marks : 15)

Choose the correct Answer :			15 x 1 = 15
1.	(b)	21	
2.	(b)	3	
3.	(a)	8	
4.	(d)	31	
5.	(a)	$\frac{c+a}{2b}$	
6.	(c)	$\begin{pmatrix} -8 & -2 \\ 1 & -7 \end{pmatrix}$	
7.	(c)	-3	
8.	(d)	8	
9.	(d)	6 cm	
10.	(b)	16 cm	
11.	(c)	60^0	
12.	(d)	-9	
13.	(c)	5 cm	
14.	(c)	$6\sqrt{2}$	
15.	(b)	$\frac{11}{13}$	

Section - II (Marks : 20)

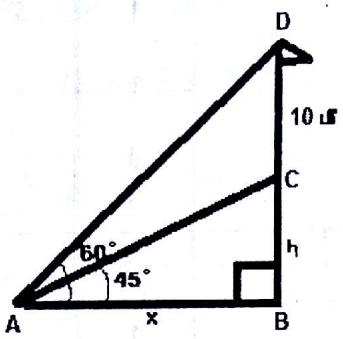
(i) Answer 10 Questions . (ii) Question No : 30 is compulsory. Select any 9 questions from the first 14 questions.			10 x 2 = 20
16.	AU(BUC) ={ 1,2,3,4,5,6,7,8} (AUB)UC ={ 1,2,3,4,5,6,7,8}	1 1	2 Marks
17.	a = 9 b = 15	1 1	2 Marks
18.	$\frac{m}{(-2/7)} = \frac{-7(m+2)/2}{m}$ m = -1 , m =2	1 1	2 Marks
19.	x = 2 y = 4	1 1	2 Marks
20.	$\frac{3x(2x+3)}{3x(x-4)}$ $\frac{(2x+3)}{(x-4)}$	1 1	2 Marks
21.	$a_{11} = 1, a_{12} = 0, a_{21} = 3, a_{22} = 2$ $A = \begin{pmatrix} 1 & 0 \\ 3 & 2 \end{pmatrix}$	1 1	2 Marks
22.	$C = 2\begin{pmatrix} 3 & 2 \\ 5 & 1 \end{pmatrix} + \begin{pmatrix} 8 & -1 \\ 4 & 3 \end{pmatrix}$ $C = \begin{pmatrix} 14 & 3 \\ 14 & 5 \end{pmatrix}$	1 1	2 Marks
23.	$P\left(\frac{lx_2+mx_1}{l+m}, \frac{ly_2+my_1}{l+m}\right)$ P(-2 , 3)	1 1	2 Marks
24.	The statement is not true. Reason: All the points are lie on the Y- axis.	1 1	2 Marks
25.	$\frac{AB}{QR} = \frac{PB}{PR}$ QR = 9cm	1 1	2 Marks
26.	CD = 30 m The Height of the Tower BD = 31.5 m	1 1	2 Marks

27.	$2\pi r$ (h+r) = 1540 h = 28 cm	1 1	2 Marks
28.	Range = L –S L = 71	1 1	2 Marks
29.	i) probability of getting two heads P(A) = $\frac{1}{4}$ ii) probability of getting exactly one tail P (B) = $\frac{2}{4}$ (or) $\frac{1}{2}$	1 1	2 Marks
30. (a)	$\frac{4}{3}\pi r^3 = 7241\frac{1}{7}$ r = 12 cm	1 1	2 Marks
	(OR)		
(b)	$x^2 - y^2$ $= a^2sec^2\theta + b^2tan^2\theta + 2absec\theta tan\theta - a^2tan^2\theta - b^2sec^2\theta - 2absec\theta tan\theta$ $= a^2 - b^2$	1 1 1	

Section – III (Marks : 45)

(i) Answer 9 Questions . (ii) Question No : 45 is compulsory. Select 8 questions from the first 14 questions .			9 x 5 = 45
31.	B U C = {1, 2, c, d, e, f, g, y} A\(B U C) = {a, b, x, z} A\B = {a, b, f, g, x, y, z} A\C = {a, b, c, x, z} $(A\backslash B) \cap (A\backslash C) = \{a, b, x, z\}$	1 1 1 1 1	5 Marks
32.	f(6) = 1, f(9) = 2, f(15) = 4, f(18) = 5, f(21) = 6 Arrow Diagram Set of ordered pairs Table Graph	1 1 1 1 1	5 Marks
33.	1 – 4 + 9 – 16 + … upto 2n terms = (-3) + (-7) + (-11) + … upto n terms $Sn = \frac{n}{2}[2a + (n-1)d$ $= \frac{n}{2}[2(-3) + (n-1)(-4)]$ = -n(2n+1)	1 1 1 1 1	5 Marks
34.	$S_n = 7(1 + 11 + 111 + \ldots$ upto n terms) $= \frac{7}{9}(9 + 99 + 999 + \ldots$ upto n terms) $= \frac{7}{9}[(10-1) + (100-1) + (1000-1) + \ldots$ upto n terms] $= \frac{7}{9}$ [(10 + 10^2+ 10^3+..... upto n terms) –n] $= \frac{7}{9}[\frac{10(10^n-1)}{9} - n]$ (or) $\frac{70}{81}(10^n - 1) - \frac{7}{9}n$	1 1 1 1 1	5 Marks

35.	$T_1 = \frac{30}{15+x}$ hr $T_2 = \frac{30}{15-x}$ hr $\frac{30}{15-x} + \frac{30}{15+x} = \frac{9}{2}$ $x^2 = 25$ $X = \pm 5$ Speed of Stream = 5 km/hr	1 1 1 1 1	5 Marks
36.	4 -3 +7 4 | 16 -24 (a-1) (b+1) 49 16 8 -3 | -24 (a-1) -24 9 8 -6 +7 | a–10 b+1 49 56 -42 49 0 a = 66 | a = – 46 (Taking -7 instead of +7) b = -43 | b = 41 (Note : alternative method can be used)	1 1 1 1 1 1	5 Marks
37.	$AB = \begin{pmatrix} 8 & -3 \\ 11 & -4 \end{pmatrix}$ $AB^T = \begin{pmatrix} 8 & 11 \\ -3 & -4 \end{pmatrix}$ $B^T = \begin{pmatrix} 2 & -1 \\ -1 & 1 \end{pmatrix}$ $A^T = \begin{pmatrix} 5 & 7 \\ 2 & 3 \end{pmatrix}$ $B^T A^T = \begin{pmatrix} 8 & 11 \\ -3 & -4 \end{pmatrix}$	1 1 1 1 1	5 Marks
38.	Area of the quadrilateral ABCD $= \frac{1}{2}\{ \begin{matrix} -4 & -3 & 3 & 2 & -4 \\ -2 & -5 & -2 & 3 & -2 \end{matrix} \}$ Sq.Units $= \frac{1}{2}\{(+20+6+9-4)-(6-15-4-12)\}$ $= \frac{1}{2}(56)$ = 28 Sq.Units (Note : alternative method can be used)	2 1 1 1	5 Marks

39.	Statement diagram Given, To prove and Construction proof Note : Without diagram give 1 marks only for statement	1 1 1 2	5 Marks
40.	 $\tan 45^\circ = \frac{BC}{AB} \Rightarrow x = h$ $h = \frac{h+10}{\sqrt{3}}$ $= \frac{10(\sqrt{3}+1)}{2}$ = 13.66 m	1 1 1 1 1	5 Marks
41.	R = 7 cm r = 4.2 cm Volume of Frustum $= \frac{1}{3}\pi h (R^2 + r^2 + Rr)$ cubic units $= \frac{1}{3} \times \frac{22}{7} \times 14 (7^2 + 4.2^2 + 7 \times 4.2)$ = 1408.58 cm^3 (or) 1408.6 cm^3	1 1 1 1 1	5 Marks
42.	Volume of cone $= \frac{1}{3}\pi r^2 h$ cubic units Volume of cuboid = l x b x h cubic units Volume of cone = Volume of cuboid Radius r = 21cm Diameter = 42 cm	1 1 2 1	5 Marks
43.	$\overline{X} = 18$ $\sum d = 0, \quad \sum d^2 = 98$ $\sigma = \sqrt{\frac{\sum d^2}{n}} = 4.428$ (approx) c.v. $= \frac{\sigma}{\bar{x}} \times 100$ = 24.6 (approx)	1 1 1 1 1	5 Marks
44.	n(S) = 36 $P(A) = \frac{18}{36}$ $P(B) = \frac{5}{36}$ $P(A \cap B) = \frac{3}{36}$ $P(A \cup B) = \frac{20}{36}$ (அ) $\frac{5}{9}$	1 1 1 1 1	5 Marks

45.	(a)	$f(x) = 3x(x^3+2x^2-4x-8)$ $g(x) = 2x(2x^3+7x^2+4x-4)$ $3x^2+12x+12 = 3(x^2+4x+4)$ $X^3+2x^2-4x-8 \div x^2+4x+4$, Remainder = 0 G.C.D. = $x(x^2+4x+4)$ (Note : alternative method can be used)	1 1 1 1 1	5 Marks
		(OR)		
	(b)	Intersecting point on X axis (a,0) Intersecting point on Y axis (0,b) a = 6 and b = 4 $\frac{x}{a}+\frac{y}{b}=1$ $2x+3y-12=0$ (Note : alternative method can be used)	1 1 1 1 1	

Section - IV
(Marks : 20)

Note : Answer both the questions choosing either of the alternatives.				2 x 10 = 20
46.	(a)	Rough diagram First Circle Line Segment Perpendicular bisector Second Circle Two tangents Length of Tangents = 8 c.m	2 2 1 1 2 1 1	10 Marks
		(OR)		
	(b)	Rough Diagram Line Segment AB Triangle ABC Perpendicular bisector Circumcircle Cyclic Quadrilateral ABCD	2 1 3 1 2 1	
47.	(a)	<table><tr><td>x</td><td>-3</td><td>-2</td><td>-1</td><td>0</td><td>1</td><td>2</td><td>3</td></tr><tr><td>y</td><td>9</td><td>0</td><td>-5</td><td>-6</td><td>-3</td><td>4</td><td>15</td></tr></table> Any five points x- axis, y- axis, scale Ploting the Points and drawing the parabola Solution set = { -2, 1.5 }	4 2 3 1	10 Marks
		(OR)		
	(b)	<table><tr><td>x</td><td>1</td><td>2</td><td>4</td><td>5</td><td>10</td><td>20</td></tr><tr><td>y</td><td>20</td><td>10</td><td>5</td><td>4</td><td>2</td><td>1</td></tr></table> Any five points x- axis, y- axis, scale Ploting the Points and drawing the Rectangular Hyperbola i) If x =5 then y = 4 ii) If y = 10 then x =2	.3 2 3 1 1	

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