

# SSLC MATHS QUARTERLY EXAM 2015- ANSWER KEY

---

## PART-A

1.c	2.a	3.d	*4.a	5.d	6.c	7.c	8.a
9.a	10.c	11.c	12.d	13.c	14.c	15.a	

\*mere attempt

## PART-B

16.  $P \cap Q = \{ \quad \}$  -----1  
 $R \setminus (P \cap Q) = \{ q, e, f, s \}$  -----1
17.  $t_n = a + (n-1)d$   $t_n = 23\sqrt{2}$  -----1+1
18. In a G.P  $\frac{t_2}{t_1} = \frac{t_3}{t_2}$  -----1  
 $m^2 - m - 2 = 0$   
 $m = 2, -1$  -----1
19. solving -----1  
 $X = 5, Y = 3$  -----1
20.  $Q = x^2 + 4x + 5$  -----1  
 $R = 12$  -----1
21.  $P(x) = x^2 - (\alpha + \beta)x + \alpha\beta$  -----1  
 $P(x) = x^2 + 4x + 3$  -----1
22.  $2A = \begin{pmatrix} 6 & 4 \\ 10 & 2 \end{pmatrix}$  -----1  
 $C = 2A + B = \begin{pmatrix} 14 & 3 \\ 14 & 5 \end{pmatrix}$  -----1
23.  $AI = \begin{pmatrix} 1 & 3 \\ 9 & -6 \end{pmatrix} \begin{pmatrix} 1 & 0 \\ 0 & 1 \end{pmatrix} = \begin{pmatrix} 1 & 3 \\ 9 & -6 \end{pmatrix} = A$  -----1  
 $IA = \begin{pmatrix} 1 & 0 \\ 0 & 1 \end{pmatrix} \begin{pmatrix} 1 & 3 \\ 9 & -6 \end{pmatrix} = \begin{pmatrix} 1 & 3 \\ 9 & -6 \end{pmatrix} = A$  -----1
24.  $G\left(\frac{X_1 + X_2 + X_3}{3}, \frac{Y_1 + Y_2 + Y_3}{3}\right)$  -----1

## SSLC MATHS QUARTERLY EXAM 2015- ANSWER KEY

---

- G(4, -2) -----1
25.  $\frac{x}{a} + \frac{y}{b} = 1$  -----1
- $9x - 2y + 3 = 0$  -----1
26.  $y = mx + c$  -----1
- $Y = \sqrt{3}x + \frac{1}{\sqrt{3}}$  (or)  $3x - \sqrt{3}y + 1 = 0$  -----1
27. AD X EC = AE x DB -----1
- EC=8, AC=16 cm -----1
28. By ABT, we have NP/OP=MN/MO -----1
- OP=18 cm -----1
29.  $\sin^6\theta + \cos^6\theta = (\sin^2\theta + \cos^2\theta)^3 - 3\sin^2\theta\cos^2\theta$  -----1
- $= 1 - 3\sin^2\theta\cos^2\theta$  -----1
- 30 a)  $\sum n^3 = \left[ \frac{n(n+1)}{2} \right]^2$  (or)  $(\sum n)^2$  -----1
- $\sum n^3 = 14400$  -----1
- b) It is a function. -----1
- Range: the set of non-negative real numbers. -----1

### PART-C

31. Each venn diagram carries 1 mark -----5
32. (i) arrow digram -----1
- (ii) = { (6,1), (9,2), (15,4), (18,5), (21,6) } -----1
- (iii) -----1

x	6	9	15	18	21
f(x)	1	2	4	5	6

- (iv) graph -----1
33.  $f(-7) = 36, f(-3) = 2$  -----1
- (i)  $f(-7) - f(3) = 34$  -----1

## SSLC MATHS QUARTERLY EXAM 2015- ANSWER KEY

---

$f(4)=3, f(-6)=25, f(1)=6$	-----1
(ii) $\frac{4f(-3)+2f(4)}{f(-6)-3f(1)}=2$	-----2
34. $a/r+a+ar=7$	-----1
$a=2$	-----2
$r=2$ or $\frac{1}{2}$	-----1
GP are 4,2,1 or 1,2,4	-----1
35. $S_n=6+66+666+\dots$ to n terms	-----1
$=6(1+11+111+\dots$ to n terms)	-----1
$=6/9(9+99+999+\dots$ to nt terms)	-----1
$=\frac{2}{3}((10 + 10^2 + 10^3 + \dots$ .n terms) - n)	-----1
$S_n = \frac{2}{3}(\frac{10(10^n-1)}{9} - 1)$	-----1
36. Area=xy	-----1
Given $(x+2)(y-2)=xy-28, -x+y=12=0$	-----1
$(x-1)(y=2)=xy+33, 2x-y-35=0$	-----1
On solving $x=23, y=11$	-----2
Area=253 cm <sup>2</sup> .	-----1
37. $\begin{array}{r rrrr} 1 & 2 & 11 & -7 & -6 \\ & 0 & 2 & 13 & 6 \\ \hline & 2 & 13 & 6 & 0 \end{array}$	-----2
$x-1$ is a root.	
$2x^2+13x+6=(x+6)(2x+1)$	-----2
Factors= $(x-1)(x+6)(2x+1)$	-----1

## SSLC MATHS QUARTERLY EXAM 2015- ANSWER KEY

---

$$38. = \frac{(a+4)(a-4)}{(a-2)(a^2+2a+4)} \times \frac{(a-2)(2a+1)}{a(2a+9)} \times \frac{(a^2+2a+4)}{(3a+1)(a-4)} \quad \text{-----}2$$

$$= \frac{(a+4)(2a+1)}{a(2a+9)(3a+1)} \quad \text{-----}1$$

$$= \frac{2a^2+9a+4}{(2a^2+9a)(3a+1)} \quad \text{-----}2$$

$$39. A^2 = \begin{pmatrix} -1 & -4 \\ 8 & 7 \end{pmatrix} \quad \text{-----}2$$

$$-4A = \begin{pmatrix} -4 & 4 \\ -8 & -12 \end{pmatrix} \quad \text{-----}1$$

$$A^2 - 4A + 5I_2 = 0 \quad \text{-----}2$$

$$40. \text{ solving, to get } 5x = \begin{pmatrix} 2 & -12 \\ -11 & 15 \end{pmatrix} \quad \text{-----}2$$

$$X = \begin{pmatrix} \frac{2}{5} & \frac{-12}{5} \\ \frac{-11}{5} & 3 \end{pmatrix} \quad \text{-----}1$$

$$3Y = \begin{pmatrix} \frac{6}{5} & \frac{39}{5} \\ \frac{42}{5} & -6 \end{pmatrix} \quad \text{-----}2$$

$$Y = \begin{pmatrix} \frac{2}{5} & \frac{13}{5} \\ \frac{14}{5} & -2 \end{pmatrix} \quad \text{-----}1$$

$$41. A = \frac{1}{2} \begin{pmatrix} -4 & -3 & 3 & 2 & -4 \\ -2 & -5 & -2 & 3 & -2 \end{pmatrix} \quad \text{-----}2$$

$$A = \frac{1}{2} \{ (20 + 6 + 9 - 4) - (6 - 15 - 4 - 12) \} \quad \text{-----}2$$

$$A = 28 \text{ sq unit} \quad \text{-----}1$$

42. formula -----1

ratio 4:1 -----2

Value m=2 -----2

43. Thales theorem

Statement -----1

Diagram -----1

## SSLC MATHS QUARTERLY EXAM 2015- ANSWER KEY

---

Proof	-----3
Note: No diagram, mark should not be awarded.	
44. $x^2 - y^2 = (a \sec\theta + b \tan\theta)^2 - (a \tan\theta + b \sec\theta)^2$	-----2
$= a^2(\sec^2\theta - \tan^2\theta) + b^2(\tan^2\theta - \sec^2\theta)$	-----2
$= a^2 - b^2$	-----1
45.a) $= -3 + (-7) + (-9) + \dots + n$ terms	-----1
It is an AP, $a = -3, d = -4$	-----1
Sum $= \frac{n}{2}(2a + (n-1)d)$	-----1
$= \frac{n}{2}(2(-3) + (n-1)(-4))$	-----1
$= -n(2n+1)$	-----1
b) Given $a+b=5, b=5-a$	-----1
$\frac{x}{a} + \frac{y}{b} = 1,$	-----1
$\frac{x}{a} + \frac{y}{5-a} = 1,$	
It passes $(6, -2)$	
$a=3$ or $b=10$	-----1
when $a=3, 2x+3y-6=0$	-----1
when $a=10, x-2y-10=0$	-----1
PART-D	
46.a) Rough diagram	-----2
First circle	-----3
Line segment	-----1
Perpendicular bisector	-----1
Second circle	-----1
Two tangent lines	-----1

## SSLC MATHS QUARTERLY EXAM 2015- ANSWER KEY

---

Measuring the length.	-----1
b) Rough Diagram	-----2
Line segment	-----1
Circle	-----2
Triangle	-----2
Altitude	-----3
47.a) Formation of equation	-----2
Plotting the points and drawing the curve	-----5
Scale, x axis, y axis	-----1+1
The value of y	-----1
b) Tabular column (any 5 points)	-----4
scale	-----1
x axis, y axis	-----1
Plotting the points	-----4

=====BEST WISHES=====

By.

K. THIRUMURUGAN.PGT

GHSS, VALUTHAVUR,

VILLUPURAM dt

CELL:9787062570