

GOVT PUBLIC EXAMINATION (2024)

SSLC - ANSWER KEY

SPB
DATE: _____

PART - I

1) (b) 3

2) (a) 7

3) (A) 2520

4) (B) 31m

5) (C) $16x^2$

6) (D) 81565656

7) (D) 114026

8) (B) 27000

9) (B) 258.205501

10) (D) $\frac{y^2}{b^2} - \frac{x^2}{a^2} = 1$

11) (D) 40118.205501

12) (A) 3:1:2

13) (A) 1.05

14) (B) 1

18) $\frac{4x^2}{z^2} \times \frac{6xz^3}{20y^3}$
 $= \frac{3x^3z}{5y^3}$

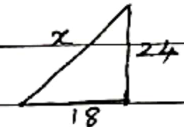
19) $x^2 + 8x - 65 = 0$

$a = 1, b = 8, c = -65$

$\text{Roots} = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a} = \frac{-8 \pm \sqrt{64 - 4(-65)}}{2}$

$= \frac{-8 \pm \sqrt{264}}{2} = \frac{-8 \pm 16.25}{2}$

20) $x^2 = 18^2 + 24^2$
 $= 324 + 576$
 $x^2 = 900$
 $x = 30$



PART - II

15) $A \times B = \{(3,2), (3,4), (5,2), (5,4)\}$
 $A = \{3, 5\}, B = \{2, 4\}$

16) $f(x) = 3x - 2, g(x) = 2x + k$
 $f \circ g = g \circ f$
 $(3x - 2) \circ (2x + k) = (2x + k) \circ (3x - 2)$
 $3(2x + k) - 2 = 2(3x - 2) + k$
 $6x + 3k - 2 = 6x - 4 + k$
 $2k = -2$
 $k = \frac{-2}{2}$
 $k = -1$

17) $a^b = b^a = 800$

$2 \overline{) 800}$
 $2 \overline{) 400}$
 $2 \overline{) 200}$
 $2 \overline{) 100}$
 $2 \overline{) 50}$
 $5 \overline{) 25}$

$5^2 \times 2^5 = 800$
 $a = 5, b = 2$ (or) $a = 2, b = 5$

21) $AB \text{ line } = AC \text{ line}$

$\frac{b-9}{a+3} = \frac{-5-9}{4+3}$

$\frac{b-9}{a+3} = \frac{-14}{7}$

$b-9 = -2(a+3)$

$b-9 = -2a-6$

$2a + b = 3$ — (1)

$a + b = 1$ — (2)

(1) - (2) $\Rightarrow a = 2$

$a = 2$ put in (2)

$a + b = 1$

$2 + b = 1$

$b = 1 - 2$

$b = -1$

22) $\text{slope } (m) = \frac{-5}{4}$

$L \text{ line } (x_1, y_1) = (-1, 2)$

Equation of line

$y - y_1 = m(x - x_1)$

$y - 2 = \frac{-5}{4}(x + 1)$

$$4(y-2) = -5(x+1)$$

$$4y - 8 = -5x - 5$$

$$5x + 4y - 8 + 5 = 0$$

$$5x + 4y - 3 = 0$$

$$(23) \frac{1 + \cos \theta}{1 - \cos \theta} = \frac{(1 + \cos \theta)(1 + \cos \theta)}{(1 - \cos \theta)(1 + \cos \theta)}$$

$$= \frac{(1 + \cos \theta)^2}{1 - \cos^2 \theta}$$

$$= \frac{(1 + \cos \theta)^2}{\sin^2 \theta}$$

$$= \frac{1 + \cos \theta}{\sin \theta}$$

$$= \frac{1}{\sin \theta} + \frac{\cos \theta}{\sin \theta}$$

$$= \csc \theta + \cot \theta$$

$$(24) \text{circumference} = 1386 \text{ m}$$

$$2\pi r = 1386$$

$$\text{Area of circle} = 3\pi r^2$$

$$= 3 \times 1386$$

$$= 4158 \text{ sq.m}$$

$$(25) \text{Length of arc} = 200$$

$$\text{Circumference} = 2500$$

$$2 \times \text{radius} \times \theta = \pi r^2 \times \theta$$

$$= 2500 \times 2$$

$$= 5000 \text{ sq.m}$$

$$(26) 25, 67, 48, 52, 18, 39, 44$$

$$18, 25, 44, 52, 67$$

$$L = 67, S = 18$$

$$\text{Range} = L - S = 67 - 18 = 49$$

$$\text{Mean} = \frac{L - S}{L + S}$$

$$= \frac{67 - 18}{67 + 18}$$

$$= \frac{49}{85}$$

$$= 0.576$$

(27)

$$S = \{SM, MT, TH, NT, TF, FS, SS\}$$

$$n(S) = 7, A = \{FS, SS\}$$

$$A = \{FS, SS\}$$

$$n(A) = 2$$

$$P(A) = \frac{n(A)}{n(S)} = \frac{2}{7}$$

(28)

23 km, 12 km

$$a = 23, b = 12$$

$$a = 6x + y$$

$$23 = 12(1) + 11$$

$$12 = 11 \times 1 + 1$$

$$11 = 1 \times 11 + 0$$

PART C

$$(29) A = \{2, 3\}, B = \{0, 1\}$$

$$C = \{1, 2\}$$

$$A \times (B \cup C) = (A \times B) \cup (A \times C)$$

$$B \cup C = \{0, 1, 2\}$$

$$A \times (B \cup C) = \{(2, 0), (2, 1), (2, 2), (3, 0), (3, 1), (3, 2)\}$$

$$A \times B = \{(2, 0), (2, 1), (3, 0), (3, 1)\}$$

$$A \times C = \{(2, 1), (2, 2), (3, 1), (3, 2)\}$$

$$(A \times B) \cup (A \times C) = \{(2, 0), (2, 1), (2, 2), (3, 0), (3, 1), (3, 2)\} - (2)$$

$$(6) = (2)$$

$$A \times (B \cup C) = (A \times B) \cup (A \times C)$$

Hence proved.

$$(30) f(x) = 2x + 1$$

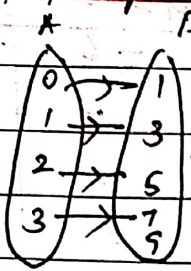
$$f(0) = 0 + 1 = 1$$

$$f(1) = 2 + 1 = 3$$

$$f(2) = 4 + 1 = 5$$

$$f(3) = 6 + 1 = 7$$

අලුතර් සමීක්ෂණය:



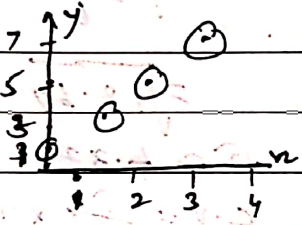
විචල්‍යවල නම:

x	0	1	2	3
y	1	3	5	7

අවම වශයෙන් සඳහා සමීක්ෂණය කරමු

$$f = \{(0,1), (1,3), (2,5), (3,7)\}$$

සමීක්ෂණය:



(39) $1^3 + 2^3 + \dots + 21^3$
 $= 1^3 + 2^3 + \dots + 21^3 - (1^3 + 2^3 + \dots + 8^3)$

$$= \left(\frac{n(n+1)}{2}\right)^2 - \left(\frac{k(k+1)}{2}\right)^2$$

$$= \left(\frac{21 \times 22}{2}\right)^2 - \left(\frac{8 \times 9}{2}\right)^2$$

$$= (21 \times 11)^2 - (4 \times 9)^2$$

$$= (231)^2 - (36)^2$$

$$= 53361 - 1296$$

$$= 52065$$

(32) $\sqrt{64x^4 - 16x^3 + 17x^2 - 2x + 1}$
 $= \sqrt{8x^2 - x + 1}$

(33) $A^2 = \begin{pmatrix} 8 & 5 \\ -5 & 3 \end{pmatrix}$

$$-5A = \frac{1}{5} \begin{pmatrix} 3 & 1 \\ -1 & 2 \end{pmatrix}$$

SPB $TI_2 = 7 \begin{pmatrix} 10 & \\ & 01 \end{pmatrix}$

$$A^2 - 5A + 5I_2 = 0$$

(34) වෙනම වෙනම

අග්‍රය - 0

අග්‍රය - 0

අග්‍රය - 0

(35) විචල්‍යවල නම සඳහා

$$\dots = \frac{1}{2} \begin{vmatrix} x_1 - x_3 & x_2 - x_4 \\ y_1 - y_3 & y_2 - y_4 \end{vmatrix}$$

$$= \frac{1}{2} \begin{vmatrix} -9 - 1 & -8 - 2 \\ -2 + 3 & -4 - 2 \end{vmatrix}$$

$$= \frac{1}{2} \begin{vmatrix} -10 & -10 \\ 1 & -6 \end{vmatrix}$$

$$= \frac{1}{2} (60 + 10)$$

$$= \frac{1}{2} \times 70$$

$$= 35 \text{ පිටු}$$

(36) සමාන්තර රේඛා අතර ඇති දුර

$$m_1 = \frac{y_2 - y_1}{x_2 - x_1} = \frac{-4 - 2}{6 - (-4)} = \frac{-6}{10} = \frac{-3}{5}$$

මෙහිදී සමාන්තර රේඛා අතර

$$m = \frac{-1}{m_1} = \frac{5}{3}$$

මෙහිදී සමාන්තර රේඛා අතර

$$y - y_1 = m(x - x_1)$$

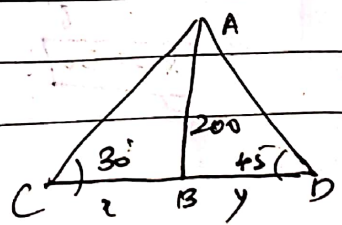
$$y - (-1) = \frac{5}{3}(x - 1)$$

$$3(y + 1) = 5(x - 1)$$

$$3y + 3 = 5x - 5$$

$$\boxed{5x - 3y - 8 = 0}$$

(37)



$$P(A \cup B) = P(A) + P(B) - P(A \cap B)$$

$$= \frac{18}{36} + \frac{5}{36} - \frac{3}{36}$$

$$= \frac{20}{36}$$

$$= \frac{5}{9}$$

Find $x = (y^3)$

44 (b) $xy = 24$

x	1	2	3	4	6	8	12	24
y	24	12	8	6	4	3	2	1

42 $7 + 77 + 777 + \dots$ n 2ndiyamam

$$= 7(1 + 11 + 111 + \dots)$$

$$= \frac{7}{9}(9 + 99 + 999 + \dots)$$

$$= \frac{7}{9}((10^1) + (10^2) + (10^3) + \dots)$$

Find:

(i) $x = 3 \Rightarrow y = 8$

(ii) $y = 6 \Rightarrow x = 4$

$$= \frac{7}{9} \left[\frac{10(10^n - 1)}{10 - 1} - 1 \right]$$

$$= \frac{7}{9} \left[\frac{10(10^n - 1) - 9}{9} \right]$$

$$= \frac{7}{9} \left[\frac{10(10^n - 1) - 9}{9} \right]$$

$$= \frac{70(10^n - 1) - 7n}{81}$$

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PART-D

43 (a) 25 marks - (3) } 8
 4 marks - (6) } marks
 (12)

(b) 25 marks - (8)
 6 marks - (5) } 8
 5 marks in 2000 = (1) } marks

44) (a) $y = 2x^2 - 3x - 5$

x	-4	-3	-2	-1	0	1	2	3	4	5
y	39	27	17	5	-5	-6	-3	4	15	39

$$y = 2x^2 - 3x - 5$$

$$0 = 2x^2 - 4x - 6$$

$$y = 2 + 1$$

x	-2	-1	0	1	2
y	-1	0	1	2	3