X – STD – APRIL -2023 QUESTION WITH ANSWER
MATHEMATICS

Time: 3.00 Hrs **Maximum Marks: 100**

Instructions: (1) check the question paper for fairness of printing. If there is any lack of fairness, inform the Hall Supervisor immediately.
(2) Use **Blue or Black** ink to write and underline and pencil to draw diagrams
Note: this question paper contains **four** parts.

PART – I (Marks: 14)

Note: (i) Answer all the 14 questions. **1 ×14=14**
(ii) Choose the most suitable answer from the given four alternatives and write the option code with the corresponding answer.

1. A = {a, b, p}, B = {2, 3}, C = {p, q, r, s} then n[(AUC) × B] is
   (A) 8 (B) 20 **(C) 12** (D) 16
2. If n(A) = p, n(B) = q, then the total number of relations that exist from A to B is ____ (A) 0
   (B) 1 (C) 2^{pq-1} **(D) 2^{pq}**
3. Given $F_1 = 1,\ F_2 = 3,\ and\ F_n = F_{n-1} + F_{n-2}\ then\ F_5\ is$
   (A) 3 (B) 5 (C) 8 **(D) 11**
4. If the sequence t_1, t_2, t_3 ..... are in A.P. then the sequence $t_6, t_{12},\ t_{18}$, ...is
   (A) a Geometric Progression **(B) an Arithmetic Progression**
   (C) neither an Arithmetic Progression nor a Geometric Progression
   (D) a constant sequence
5. $\frac{3y-3}{y} \div \frac{7y-7}{3y^2}\ is$
   (A) $\frac{9y}{7}$ (B) $\frac{9y^3}{(21y-21)}$ (C) $\frac{21y^2-42y+21}{3y^3}$ (D) $\frac{7(y^2-2y+1)}{y^2}$
6. Graph of a quadratic equation is a _____
   a)straight line (b) circle **(c) parabola** (D) hyperbola
7. If in triangles ABC and EDF, $\frac{AB}{DE} = \frac{BC}{FD}$ then they will be similar, when
   (A) ∠B = ∠E (B) ∠A = ∠D **(C) ∠B = ∠D** (D) ∠A = ∠F
8. A tangent is perpendicular to the radius at the
   (A) centre **(B) point of contact** (C) infinity (D) chord
9. The slope of the straight line perpendicular to x-axis is
   a)1 (b) 0 **(c) ∞** (D) −1
10. $If\ \sin\theta = \cos\theta,\ then\ 2tan^2\theta + sin^2\theta - 1\ \ is\ equl\ to$
    (A) $\frac{3}{2}$ (B) $-\frac{3}{2}$ (C3) $\frac{2}{3}$ (D) $\frac{-2}{3}$
11. The height of a right circular cone whose radius is 5cm and slant height is 13 cm will be
    (A) 12 cm (B) 10 cm (C) 13 cm (D) 5 cm

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12. The ratio of the volumes of a cylinder, a cone and a sphere, if each has the same diameter and same height is

(A) 1:2:3 (B) 2:1:3 (C) 1:3:2 **(D) 3:1:2**

13. If the sum and mean of a data are 407 and 11 respectively, then the number of observations in the data are:

(A)37 $(b)4477$ $(c)396$ $(d)418$

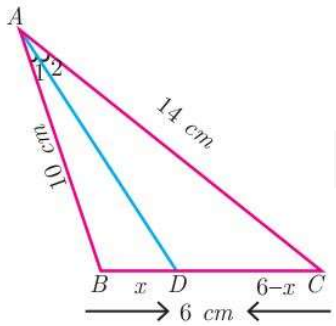
14. If a letter is chosen at random from the English alphabets $\{a, b, \ldots, z\}$, then the probability that the letter chosen precedes x

$(A)\ \frac{12}{13}$ $(B)\ \frac{1}{13}$ $(\boldsymbol{C})\ \frac{\mathbf{23}}{\mathbf{26}}$ $(D)\ \frac{3}{26}$

PART – II (Marks: 20)

II. Answer 10 Questions. Question No. 28 is compulsory. **10×2=20**

15. If B×A = $\{-2, 3), (-2, 4), (0, 3), (0, 4), (3, 3), (3, 4)\}$ find A and B
16. find k if $fo\ f(k) = 5$ where $f(k) = 2k - 1$
17. Find x so that $x + 6, x + 12$ and $x + 15$ are consecutive terms of a Geometric Progression.
18. Simplify $\frac{x+2}{4y} \div \frac{x^2-x-6}{12y^2}$
19. Determine the nature of the roots for the following quadratic equations $2x^2 - x - 1 = 0$
20. In the Fig., AD is the bisector of ∠BAC, if AB =10 cm, AC =14 cm and BC =6 cm. Find BD and DC.



21. A cat is located at the point $(-6, -4)$ in xy plane. A bottle of milk is kept at (5, 11). The cat wish to consume the milk travelling through shortest possible distance. Find the equation of the path it needs to take its milk.
22. If the straight lines $12y = -(p + 3)x + 12,\quad 12x - 7y = 16$ are perpendicular then find 'p'.
23. $prove\ that\ \frac{\sec\theta}{\sin\theta} - \frac{\sin\theta}{\cos\theta} = \cot\theta$
24. The radius of a conical tent is 7 m and the height is 24 m. Calculate the length of the canvas used to make the tent if the width of the rectangular canvas is 4m?
25. If the ratio of radii of two spheres is 4:7, find the ratio of their volumes.
26. Find the range and coefficient of range of the following data.
    63, 89, 98, 125, 79, 108, 117, 68
27. A and Bare two candidates seeking admission to IIT. The probability that A getting selected is 0.5and the probability that both A and B getting selected is 0.3. Prove that the probability of B being selected is atmost 0.8.
28. If $p^2 \times q^1 \times r^4 \times s^3 = 3{,}15{,}000$ then find p, q, r and s.

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PART – III (Marks: 50)

III. Answer 10 Questions. Question No. 42 is compulsory. **10×5=50**

29. Let $f: A \to B$ be a function defined by $f(x) = \frac{x}{2} - 1$, where $A = \{2, 4, 6, 10, 12\}$, $B = \{0, 1, 2, 4, 5, 9\}$ Represent f by (i) set of ordered pairs; (ii) a table; (iii) an arrow diagram; (iv) a graph
30. The houses of a street are numbered from 1to 49. Senthil's house is numbered such that the sum of numbers of the houses prior to Senthil's house is equal to the sum of numbers of the houses following Senthil's house. Find Senthil's house number?
31. Find the sum to n terms of the series $5 + 55 + 555 + \cdots$ ....
32. Solve the following system of linear equations in three variables

$$x + 20 = \frac{3y}{2} + 10 = 2z + 5 = 110 - (y + z)$$

33. If A= $\begin{pmatrix} 5 & 2 & 9 \\ 1 & 2 & 8 \end{pmatrix}$, B = $\begin{pmatrix} 1 & 7 \\ 1 & 2 \\ 5 & -1 \end{pmatrix}$ verify that $(AB)^T = B^T A^T$
34. Two poles of height 'a' metres and 'b' metres are 'p' metres apart. Prove that the height of the point of intersection of the lines joining the top of each pole to the foot of the opposite pole is given by $\frac{ab}{a+b}$ metres.
35. state and prove Angle Bisector Theorem.
36. Find the area of the quadrilateral formed by the points $(8, 6)$, $(5, 11)$, $(-5, 12)$ and $(-4, 3)$.
37. Find the equation of a straight line parallel to X-axis and passing through the point of intersection of the lines $7x - 3y = -12$ and $2y = x + 3$.
38. From the top of a lighthouse, the angle of depression of two ships on the opposite sides of it are observed to be 30° and 60°. If the height of the lighthouse is h meters and the line joining the ships passes through the foot of the lighthouse, show that the distance between the ships is $\frac{4h}{\sqrt{3}}$ m.
39. The radius and height of a cylinder are in the ratio 5:7and its curved surface area is 5500 sq.cm. Find its radius and height.
40. Arul has to make arrangements for the accommodation of 150 persons for his family function. For this purpose, he plans to build a tent which is in the shape of cylinder surmounted by a cone. Each person occupies 4 sq. m of the space on ground and 40 cu. meter of air to breathe. What should be the height of the conical part of the tent if the height of cylindrical part is 8m?
41. Two unbiased dice are rolled once. Find the probability of getting (i) a doublet (equal numbers on both dice) (ii) the product as a prime number (iii) the sum as a prime number (iv) the sum as 1
42. Let $A = \{x \in \mathbb{W} \ x < 3\}$ and $B = \{x \in \mathbb{N} \ 1 < x \leq 3\}$ and $c = \{3, 5, 7\}$ verify that $A \times (BUC) = (A \times B)U\ (A \times C)$.

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PART – IV (Marks: 16)

IV. Answer both questions. **2×8=16**

43. A) Take a point which is 11cm away from the centre of a circle of radius 4cm and draw the two tangents to the circle from that point. (OR) B) Draw a triangle ABC of base BC = 8 cm, ∠A = 60° and the bisector of ∠A meets BC at D such that BD = 6 cm
44. A)Varshika drew 6 circles with different sizes. Draw a graph for the relationship between the diameter and circumference (approximately related) of each circle as shown in the table and use it to find the circumference of a circle when its diameter is 6 cm.

Diameter (x) cm	1	2	3	4	5
Circumference (y)cm	3.1	6.2	9.3	12.4	15.5

B) Draw the graph of $y = x^2 - 5x - 6$ and hence solve $x^2 - 5x - 14 = 0$

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X – STD – APRIL -2023 ANSWER KEY
MATHEMATICS

Section - I $14 \times 1 = 14$

1	c) 12		8	(b) point of contact
2	d) 2^{pq}		9	(c) ∞
3	d) 11		10	$(a)\ \frac{3}{2}$
4	b) an Arithmetic Progression		11	(a) 12 cm
5	a) $\frac{9y}{7}$		12	(d) 3:1:2
6	(c) parabola		13	(a) 37
7	(c) $\angle B = \angle D$		14	$(c)\ \frac{23}{26}$

Section - I $10 \times 2 = 20$

15	A= {3, 4} $B = \{-2,0,3\}$	1 1	2 mark
16	$fof(k) = f[f(k)] \Rightarrow 4k - 3$ $fof(k) = 5 \quad k = 2$	1 1	2 mark
17	G.P is $x+6, x+12, x+15$ $r = \frac{t_2}{t_1} = \frac{t_3}{t_2} \Rightarrow \frac{x+12}{x+6} = \frac{x+15}{x+12}$ $(x+12)^2 = x+6\,(x+15) \Rightarrow x = -\frac{54}{3} \quad x = -18$	1 1	2 mark
18	$\frac{x+2}{4y} \times \frac{12y^2}{x^2-x-6}$ $\frac{x+2}{4y} \times \frac{12y^2}{(x-3)(x+2)} \Rightarrow \frac{3y}{x-3}$	1 1	2 mark
19	$2x^2 - x - 1 = 0 \quad a = 2, \quad b = -1, \quad c = -1$ $\Delta = b^2 - 4ac \Rightarrow (-1) - 4(2)(-1)$ $= 9$ $\Delta > 0$ *real and unequal roots*	1 1	2 mark
20	$AB = 10\ cm, \quad AC = 14cm, \quad BC = 6cm \quad BD = ? \quad DC = ?$ BY using ABT $\frac{AB}{AC} = \frac{BD}{DC} \Rightarrow \frac{10}{4} = \frac{X}{6-X}$ $x = 2.5\ cm \quad BD = 2.5\ cm \quad DC = 3.5cm$	1 1	2 mark
21	$A(x_1, y_1)\ B = (5,11)$ $\frac{y-y_1}{y_2-y_1} = \frac{x-x_1}{x_2-x_1}$ $\frac{y-(-4)}{11-(-4)} = \frac{x-(-6)}{5-(-6)}$ $15x - 11y + 46 = 0$	1 1	2 mark

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22	$12y = -(p+3)x + 12 \quad \& \quad 12x - 7y = 16$ $m_1 = -\frac{x}{y} = -\frac{(p+3)}{12} \quad \Rightarrow \quad m_2 = -\frac{x}{y} = \frac{12}{7}$ $m_1 \times m_2 = -1 \Rightarrow p = 4$	1 1	2 mark
23	$\frac{\sec\theta}{\sin\theta} - \frac{\sin\theta}{\cos\theta} = \cot\theta$ $\frac{1/\cos\theta}{\sin\theta} - \frac{\sin\theta}{\cos\theta} \Rightarrow \frac{1 - sin^2\theta}{\sin\theta\cos\theta}$ $\frac{1 - cos^2\theta}{\sin\theta\cos\theta} = \cot\theta$	1 1	2 mark

24	$r = 7m, \quad h = 24m, \quad l = \sqrt{r^2 + h^2} \Rightarrow l = 25m$ $CSA\ of\ the\ conical\ tent = \pi rl\ sq.unit$ $= \frac{22}{7} \times 7 \times 25 = 550m^2$ Length of the canvas $\frac{550}{4} = 137.5m.$	 1 1	2 mark
25	Let $r_1\ and\ r_2$ be the radii of the two given sphere $\frac{r_1}{r_2} = \frac{4}{7}$ Radio of their volume $= \frac{\frac{4}{3}\pi r_1^3}{\frac{4}{3}\pi r_2^3} = \frac{r_1^3}{r_2^3}$ $\frac{v_1}{v_2} = \frac{4 \times 4 \times 4}{7 \times 7 \times 7} = \frac{64}{343}$ Ratio of their volume 64: 343	 1 1	2 mark
26	Range $= L - S \Leftrightarrow 125 - 63 = 62$ Coefficient of range $= \frac{L-S}{L+S} = \frac{125-63}{125+63} = \frac{62}{188} \Leftrightarrow 0.33$	1 1	2 mark
27	$P(A) = 0.5 \quad P(A \cap B) = 0.3$ $P(AUB) \leq 1$ $P(A) + P(B) - P(A \cap B) \leq 1$ $P(B) \leq 1 - 0.2$ $P(B) = 0.8$	 1 1	2 mark
28	$p^2 \times q^1 \times r^4 \times s^3$ 2 | 315000 2 | 157500 2 | 78750 3 | 39375 5 | 13125 3 | 2625 5 | 875 5 | 175 7 | 35 5 $p^2 \times q^1 \times r^4 \times s^3 = 3^2 \times 7^1 \times 5^4 \times 2^3$ $p = 3, \quad q = 7, \quad r = 5, \quad s = 2$	 1 1	2 mark

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Section - III $10 \times 5 = 50$

29 $f(x) = \frac{x}{2} - 1 \quad A = \{2,4,6,10,12\}, \quad B = \{0,1,2,4,5,9\}$ — 1

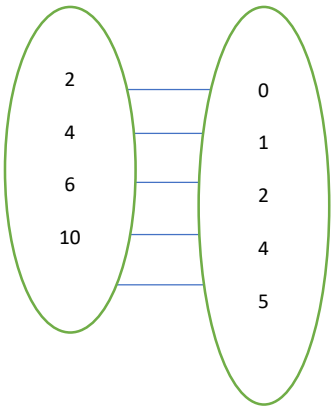
(i) Set ordered pairs — 1

$\{(2,0), (4,1), (6,2), (10,4), (12,5)\}$

(ii) Table — 1

x	2	4	6	10	12
$f(x)$	0	1	2	4	5

(iii) An arrow diagram — 1



Graph — 1

5 MARK

30 Senthil house number be x

$1 + 2 + 3 + \cdots \ldots + (x-1) = (x+1) + (x+2) + \cdots \ldots + 49$ — 1

$1 + 2 + 3 + \cdots \ldots + (x-1) = (1 + 2 + 3 + \cdots \ldots + 49) - (1 + 2 + \cdots + x)$ — 1

$\frac{x-1}{2}[1 + x - 1] = \frac{49}{2}[1 + 49] - \frac{x}{2}[1 + x]$ — 1

$\frac{x(x-1)}{2} = \frac{49 \times 50}{2} - \frac{x(x+1)}{2}$ — 1

$x^2 - x = 2450 \quad = x = 35$ — 1

5mark

31 $= 5 + 55 + 555 + \cdots \ldots . + n\ terms$ — 1

$= \frac{5}{9}(9 + 99 + 999 + \cdots \ldots + n\ terms)$ — 1

$= \frac{5}{9}[(10-1) + (100-1) + (1000-1) + \cdots . + n\ terms]$ — 1

$= \frac{5}{9}[(10 + 100 + 1000 + \cdots . + n\ terms) - (1 + 1 + 1 + \cdots .. + n\ terms)]$

$= \frac{5}{9}\left[\frac{10(10^n - 1)}{9} - n\right]$ — 1 1

$= \frac{50\,(10^n - 1)}{81} - \frac{5n}{9}$ — 1

5mark

32 I II III IV

$x + 20 = \frac{3y}{2} + 10 = 2z + 5 = 110 - (y + z)$

I&II $2x - 3y = -20$ ---------- (1) — 1

I & III $x - 2z = -15$ ---------- (2)

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	I & IV $x + y + z = 90$ --------- (3) 2×3 $\Rightarrow$ $2x - 2y + 2z = 180$ 2 $x - 2z = -15$ $3x + 2y = 165$ $-----(4)$ 1×3 $\Rightarrow 6x - 9y = -60$ 4×2 $\Rightarrow$ $6x + 4y = 330$ $-13y = -330$ $x = 35,$ $y = 30,$ $z = 25$	1 1 1 1	5mark
33	$A = \begin{pmatrix} 5 & 2 & 9 \\ 1 & 2 & 8 \end{pmatrix}$ $B = \begin{pmatrix} 1 & 7 \\ 1 & 2 \\ 5 & -1 \end{pmatrix}$ L.H.S $AB = \begin{pmatrix} 52 & 30 \\ 43 & 3 \end{pmatrix}$ $AB^T = \begin{pmatrix} 52 & 43 \\ 30 & 3 \end{pmatrix} ----------(1)$ R.H.S $B^T = \begin{pmatrix} 1 & 1 & 5 \\ 7 & 2 & -1 \end{pmatrix}$ $A^T = \begin{pmatrix} 5 & 1 \\ 2 & 2 \\ 9 & 8 \end{pmatrix}$ $B^T A^T = \begin{pmatrix} 52 & 43 \\ 30 & 3 \end{pmatrix} ----(2)$ L.H.S = R.H.S $AB^T = B^T A^T$ hence proved	 1 1 1 1 1	5 mark

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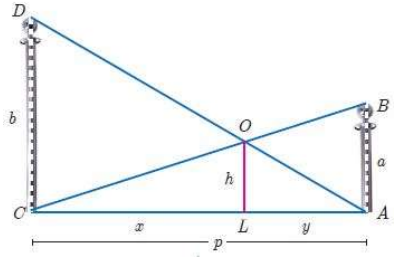
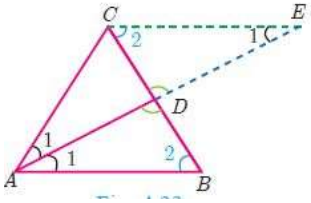
34	CL= x, LA = y $x + y = P$ $\Delta ABC,\ \Delta LOC$ $\frac{CA}{CL} = \frac{AB}{LO} \Rightarrow \frac{p}{x} = \frac{a}{h}$ $x = \frac{ph}{a} - - - (1)$  $\Delta ALO,\ \Delta ACD$ $\frac{AL}{AC} = \frac{OL}{DC} \Rightarrow \frac{y}{b} = \frac{h}{b}$ $y = \frac{ph}{b} - - - - - - - - (2)$ Add 1 and 2 $x + y = \frac{ph}{a} + \frac{ph}{b} \Rightarrow p = ph\left(\frac{1}{a} + \frac{1}{b}\right)$ $1 = h\left(\frac{a+b}{ab}\right)$ $h = \frac{ab}{a+b}$	1 1 1 1 1	5mark
35	Statement Diagram Given, To prove and construction Proof Note: without diagram give 1 marks only for statement **Statement** The internal bisector of an angle of a triangle divides the opposite side internally in the ratio of the corresponding sides containing the angle.  Given : In $\Delta ABC,\ AD$ internal bisector. To prove : $\frac{AB}{AC} = \frac{BD}{CD}$ Construction : Draw a line through C parallel to AB. Extend AD to meet line through C at E $\Delta ACE \text{ is isosceles triangle}$ $AC = CE$ $\Delta ABD \sim \Delta ECD$ $\frac{AB}{CE} = \frac{BD}{CD}$	1 1 1 2	5 mark

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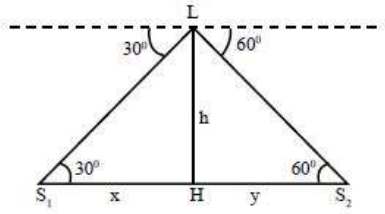
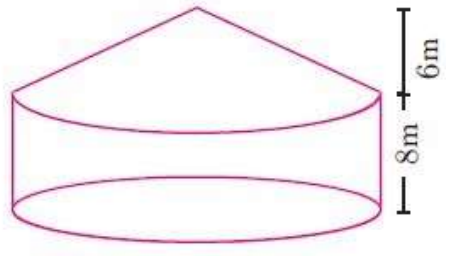
	$\frac{AB}{AC} = \frac{BD}{CD}$ Hence proved		
36	$A(8,6), B(5,11), C(-5,12), D(-4,3)$ $= \frac{1}{2}\begin{bmatrix} x_1 & x_2 & x_3 & x_4 & x_1 \\ y_1 & y_2 & y_3 & y_4 & y_1 \end{bmatrix}$ $sq.units$ $= \frac{1}{2}\begin{bmatrix} 8 & 5 & -5 & -4 & 8 \\ 6 & 11 & 12 & 3 & 6 \end{bmatrix}$ $= \frac{1}{2}\{(88 + 60 - 15 - 24) - (30 - 55 - 48 + 24)\}$ $= \frac{1}{2}(109 + 49)$ $= 79\ sq.units.$	1 1 1 1 1	5mark
37			
38	In $\Delta\ ABC,\ CB = x,\ BD = y$  $\Delta\ ABC, \tan 30° = \frac{AB}{BC}$ $\frac{1}{\sqrt{3}} = \frac{h}{x}$ $x = \sqrt{3}\,h - - - - - -(1)$ $\Delta\ ABD, \tan 60° = \frac{AB}{BD}$ $\sqrt{3} = \frac{h}{y}$ $y = \frac{h}{\sqrt{3}} - - - -(2)$ From 1 and 2 $x + y = \sqrt{3}\,h + \frac{h}{\sqrt{3}}$ $x + y = \frac{4h}{\sqrt{3}}\ m$	1 1 1 1 1	5mark
39	$r : h = 5 : 7 \Rightarrow r = 5x, \quad h = 7x$ Volume of the cylinder = $2\pi rh\ sq.units$ $5500 = 2 \times \frac{22}{7} \times 5x \times 7x$ $x = 5$ Radius = $r = 5x = 5(5) = 25$ Height = h = $7x = 7 \times 5 = 35$	1 1 1 1 1	5 mark
40	Area for one person = 4 sq.m Total of person = 150  	1 1	5 mark

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	Total base area = 150×4 $= \pi r^2 = 600 \ ----(1)$ One person = $40\ m^3$ Volume of air required for 150 persons = $150 \times 40 = 6000\ m^3$ $\pi r^2 h_1 + \frac{1}{3}\pi r^2 h_2 = 6000$ $\pi r^2 \left(h_1 + \frac{1}{3}h_2\right) = 6000$ $600\left(8 + \frac{1}{3}h_2\right) = 6000$ $\frac{1}{3}h_2 = 10 - 8 = 2$ $h_2 = 6\ m$ Therefore, the height of the conical tent $h_2\ is\ 6\ m.$	1 1 1	
41	Sample space = S= $\begin{Bmatrix}(1,1),(1,2),(1,3),(1,4),(1,5),(1,6),\\(2,1),(2,2),(2,3),(2,4),(2,5),(2,6),\\(3,1),(3,2),(3,3),(3,4),(3,5),(3,6),\\(4,1),(4,2),(4,3),(4,4),(4,5),(4,6),\\(5,1),(5,2),(5,3),(5,4),(5,5),(5,6),\\(6,1),(6,2),(6,3),(6,4),(6,5),(6,6)\end{Bmatrix}$ $n(s) = 36$ 1. A= $\{(1,1),(2,2),(3,3),(4,4),(5,5),(6,6)\}$ $n(A) = 6$ $P(A) = \frac{n(A)}{n(s)} = \frac{6}{36}$ 2. B= $\{(1,2),(2,1),(1,3),(3,1),(1,5),(5,1)\}$ $n(B) = 6$ $P(B) = \frac{n(B)}{n(s)} = \frac{6}{36}$ 3. C= $\begin{Bmatrix}(1,1),(1,2),(1,4),(1,6),\\(2,1),(2,3),(2,5),\\(3,2),(3,4),\\(4,1),(4,3),\\(5,2),(5,6),\\(6,1),(6,5)\end{Bmatrix}$ $n(C) = 15$ $P(C) = \frac{n(C)}{n(s)} = \frac{15}{36}$ 4. $n(D) = 0$ $P(D) = \frac{n(D)}{n(s)} = \frac{10}{36} = 0$	1 1 1 1 1	5 mark
42	$A = \{0,1,2\},\quad B = \{2,3,4,5\},\quad C = \{3,5,7\}$ $B \cup C = \{2,3,4,5,7\}$ $A \times (B \cup C) = \begin{Bmatrix}(0,2),(0,3),(0,4),(0,5),(0,7)\\(1,2),(1,3),(1,4),(1,5),(1,7)\\(2,2),(2,3),(2,4),(2,5),(2,7)\end{Bmatrix} ---(1)$ $A \times B$ $= \{(0,2),(0,3),(0,4),(0,5),(1,2),(1,3),(1,4),(1,5),(2,2),(2,3),(2,4),(2,5)\}$	1 1 1	

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	$A \times C = \{(0,3),(0,5),(0,7),\}(1,3),(1,5),(1,7),(2,3),(2,5),(2,7)\}$ $(A \times B) \cup (A \times C) = \begin{Bmatrix}(0,2),(0,3),(0,4),(0,5),(0,7)\\(1,2),(1,3),(1,4),(1,5),(1,7)\\(2,2),(2,3),(2,4),(2,5),(2,7)\end{Bmatrix} - - - (2)$ From 1 and 2 is verified. $A \times (B \cup C) = (A \times B) \cup (A \times C)$	1 1 1	5 mark
	Section - IV $2 \times 8 = 16$		
43 a)	Rough diagram First circle Second circle Two tangents Length of the tangents = 10.1 cm (or) 10.2 (or) 10.3 cm	2 2 2 1 1	8 mark
b	Rough diagram Line segment Circle Perpendicular bisector Draw ΔABC	2 2 2 1 1	8 mark
44 a	X – axis , Y – axis Scale Variation : direct variation Equation: $y = kx$ $y = (3.1)x$ $x = 6 \; and \; y = 18.6$	2 1 1 2 2	8 mark
b	X – axis , Y – axis Scale $y = x^2 - 5x - 6$ $y = x^2 - 5x - 6$ $0 = x^2 - 5x - 14$ $y = 8$ Straight line Solution : $x = \{-2,7\}$	2 1 2 1 1 1	8 mark

x	-2	-1	0	1	2	3	4	5	6	7
y	8	0	-6	-10	-12	-12	-10	-6	0	8

x	-2	-1	0	1	2
y	8	8	8	8	8

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