

SETHU BHASKARA MAT HR SEC SCHOOL
QUARTERLY EXAMINATION - 2026 - 27
MATHEMATICS

STD: X

Marks: 100

I CHOOSE

- 1) c) 3
- 2) c) $2^{mn} - 1$
- 3) c) $\{1, -1\}$
- 4) d) 2520
- 5) a) 1

6) c) 14280

7) b) 5

8) a) straight line

9) a) $a^2 + ab + b^2$

10) d) 15cm

11) b) 4cm

12) c) 3.5

13) b) $-\sqrt{3}$

14) a) $\frac{y^2}{b^2} - \frac{x^2}{a^2} = 1$

I 2 Marks

15) $A \times A = \{(1,1) (2,4) (3,9) (4,16) (5,25) (6,36)\}$

Domain = $\{1, 2, 3, 4, 5, 6\}$

Range = $\{1, 4, 9, 16, 25, 36\}$

16) $3(2x+k) - 2 = 2(3x-2) + k$

$k = -1$

17) $a = 2$ (or) 5
 $b = 5$ or 2

18) $\frac{15 \times 16 \times 3!}{6}$

$= 1240$

19) $\frac{(x+4)(x+2)}{(x-1)(x+2)}$

E.V = 1

20) $x - \frac{1}{x} = \frac{24}{5}$

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

21) $\alpha + \beta = -\frac{1}{3}, \alpha\beta = -\frac{2}{3}$

$\frac{\alpha}{\beta} + \frac{\beta}{\alpha} = -\frac{61}{6}$

22) $\frac{9}{16} = \frac{(2.1)^2}{EF^2}$

$EF = 2.8 \text{ cm}$

23

$\frac{10}{14} = \frac{9}{6-x}$

BD = 2.5cm, DC = 3.5cm

24

$m = \frac{0 - \sqrt{5}}{0 - 5} = \frac{1}{\sqrt{5}}$

$y + 4 = -\frac{5}{7}(x - 3)$

$\Rightarrow 5x + 7y + 13 = 0$

x-intercept = -3

y-intercept = -4

27

$\sqrt{\frac{1+\cos\theta}{1-\cos\theta} \times \frac{1+\cos\theta}{1+\cos\theta}} = \frac{1+\cos\theta}{\sin\theta}$

$= \cos\theta + \cot\theta$

28

$2x, 5x-7, 7x$

$x = 14$

no's $\Rightarrow 28, 70, 98$

III

5 Marks

29

$A = \{0, 1\}$ $B = \{2, 3, 4\}$
 $C = \{3, 5\}$

$B \cup C = \{2, 3, 4, 5\}$

$A \times (B \cup C) = \{(0,2) (0,3) (0,4) (0,5) (1,2) (1,3) (1,4) (1,5)\}$

$A \times B = \{(0,2) (0,3) (0,4) (1,2) (1,3) (1,4)\}$

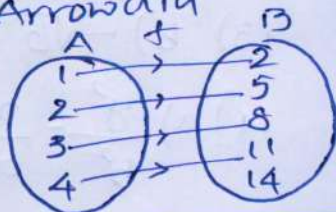
$A \times C = \{(0,3) (0,5) (1,3) (1,5)\}$

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

$$= \{(0,2)(0,3)(0,4)(0,5)(1,2)(1,3)(1,4)(1,5)\}$$

30) $f(1) = 2, f(2) = 5$
 $f(3) = 8, f(4) = 11$

(i) Arrow diagram



(ii) Table

x	1	2	3	4
f(x)	2	5	8	11

(iii) $f = \{(1,2)(2,5)(3,8)(4,11)\}$

(iv) graph

31 (i) 32°C

(ii) 82.4°C

(iii) 14°C

(iv) 100°C

(v) -40°

32 $P_1 = 2, P_2 = 3, P_3 = 5, P_4 = 7$
 $x_1 = 3, x_2 = 4, x_3 = 2, x_4 = 1$

33 $301 + 308 + \dots + 595$
 $n = 43$

$$\therefore S_{43} = \frac{43}{2} [301 + 595]$$

$$= \frac{43}{2} \times 896$$

$$= 19264$$

34 $3 + 33 + 333 + \dots + n \text{ terms}$

$$3[1 + 11 + 111 + \dots + n \text{ terms}]$$

$$\frac{3}{9} [9 + 99 + 999 + \dots + n \text{ terms}]$$

$$= \frac{1}{3} [(10 + 10^2 + \dots + n) - n]$$

$$= \frac{1}{3} \left[\frac{10(10^n - 1)}{9} - n \right]$$

$$= \frac{10(10^n - 1)}{27} - \frac{n}{3}$$

35) $3x - 2y + z = 2$

$$2x + 3y - z = 5$$

$$x + y + z = 6$$

From (1) & (2) $5x + y = 7$

From (2) & (3) $3x + 4y = 11$

From (4) & (5) $x = 1$

$\therefore y = 2, z = 3$

36 $6x^2 - 5x + 3$

$$6x^2 - 5x + 3 - 60x + 61x^2 - mx + n$$

$$36x^2$$

$$-60x^3 + 61x^2$$

$$-60x^3 + 25x^2$$

$$36x^2 - mx + n$$

$$36x^2 - 30x + 9$$

$$12x^2 - 5x + 3$$

$$m = 30, n = 9$$

37 $A = c^2 - ab, B = -2(a^2 - bc)$

$$C = b^2 - ac$$

$$B^2 - 4AC = 0$$

$$\Rightarrow 4(a^2 - bc)^2 - 4(c^2 - ab)(b^2 - ac) = 0$$

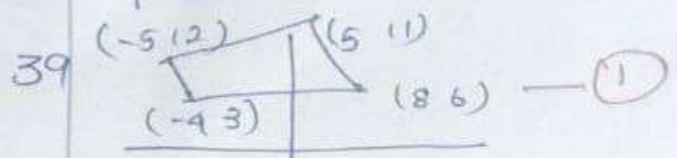
$$\Rightarrow a^4 - 2a^2bc + b^2c^2 - b^2c^2 + ac^3 + ab^3 - a^2bc = 0$$

$$\Rightarrow a(a^3 + b^3 + c^3 - 3abc) = 0$$

$$\therefore a = 0 \text{ (or) } a^3 + b^3 + c^3 = 3abc$$

38 statement — (1) dia — (1) 42

Given
To prove: — (1)
proof: — (2)



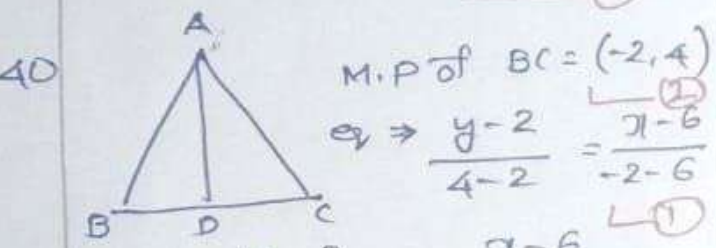
A(8, 6) B(5, 11) C(-5, 12)
D(-4, 3)

Area = $\frac{1}{2} [8 \times 5 - 5 \times 4 + 8 \times 6 - 6 \times 11 + 5 \times 12 - 12 \times (-4) + (-5) \times 3 - 3 \times (-4)]$ — (1) 43

= $\frac{1}{2} [(88 + 60 - 15 - 24) - (30 - 55 - 48 + 24)]$ — (2)

= $\frac{1}{2} [109 + 49]$

= $\frac{1}{2} \times 158 = 79 \text{ Sq units}$ — (1) (b)



M.P of B C = (-2, 4)
eq $\Rightarrow \frac{y-2}{4-2} = \frac{x-6}{-2-6}$ — (1)

$\Rightarrow \frac{y-2}{2} = \frac{x-6}{-8}$ — (1) 44

$\Rightarrow 2x + 8y - 28 = 0$ — (1) (a)

$\Rightarrow x + 4y - 14 = 0$ — (1)

41 $m^2 + n^2 = \frac{\cos^2 \alpha}{\cos^2 \beta} + \frac{\cos^2 \alpha}{\sin^2 \beta}$ — (1)

= $\frac{\cos^2 \alpha \sin^2 \beta + \cos^2 \alpha \cos^2 \beta}{\cos^2 \beta \sin^2 \beta}$ — (1) (b)

= $\frac{\cos^2 \alpha (\sin^2 \beta + \cos^2 \beta)}{\cos^2 \beta \sin^2 \beta}$

= $\frac{\cos^2 \alpha}{\cos^2 \beta \sin^2 \beta}$ — (1)

Let's
 $(m^2 + n^2) \cos^2 \beta = \frac{\cos^2 \alpha}{\cos^2 \beta \sin^2 \beta} \times \cos^2 \beta$ — (1)

= $\left(\frac{\cos \alpha}{\sin \beta} \right)^2 = n^2$ — (1)

point $(\frac{1}{13}, \frac{2}{13})$ — (2)

eq $\Rightarrow \frac{x}{K} + \frac{y}{K} = 1$

$x + y = K \Rightarrow K = \frac{6}{13}$ — (1)

Reqd eq $\Rightarrow x + y = \frac{6}{13}$ — (1)

$\Rightarrow 13x + 13y - 6 = 0$ — (1)

8 Marks

- RD — (1)
- ΔPQR — (2)
- 5 arcs — (2)
- 2 similar triangles — (2)
- steps — (1)

- RD — (1)
- QR = 6.5 cm — (1)
- $\perp^r$ bisector — (2)
- completing circle — (1)
- Altitude 4.5 cm — (2)
- steps — (1)
- axis — (1)
- scale — (1)

x	60	120	180	240	300
y	50	100	150	200	250

When $x \uparrow y \uparrow$ — (2)

- It is D.V — (1) — plotting
- (i) $K = \frac{5}{6}$ — (1) — Dot line
- (ii) 75 km — (1)
- (iii) 360 — (1) — plotting points
- st. line — (1)
- dotted lines — (1)

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

when $x \uparrow y \downarrow$ — (2)

It is I.V $K = 24$ — (1)

(i) $x = 3, y = 8$ — (1) (ii) $y = 6, x = 4$ — (1)

- axis — (1)
- scale — (1)
- plotting — (1)
- curve — (1)
- dotted lines — (1)

Handling Teachers

1. P. Vas ~~Mara Devi~~
2. ~~Venka~~
3. R. Neetha
4. ~~Arathi~~
5. R. Shil ~~Shil~~

M. Mathi
21/9/28

