ଉତ୍ତରମାଳା
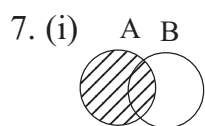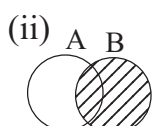
ଅନୁଶୀଳନୀ - 1 (a)
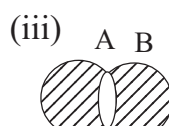
1. (i) $\in$, (ii) $\notin$, (iii) =, (iv) =, (v) $\subset$, (vi) $\neq$; 2. (i) {3, 4, 5, 6}, (ii) {1, 2, 3, 4, 5},

(iii) {1, 2, 3, 5, 6}, (iv) {5}, (v) {3}, (vi) ϕ, (vii) {3, 4}, (viii) {1, 2}, (ix) {1, 2, 3},

(x) {6}, (xi) {4, 5}, (xii) {5, 6} ; 4.(i) {1, –1}, (ii) {2, 4}, (iii) ϕ, (iv) {0, 1, 2, 3}

5. (i) {a, b, d, e, p}, (ii) {a, b, p, n, m, x, y}, (iii) {a, b, p, m, y} ;

7. (i)

(ii)

(iii)

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

9. $I_{20} - I_{16} = \{17, 18, 19, 20\}$, $I_{16} - I_{20} = \{\}$ କିମ୍ବା ϕ ;

ଅନୁଶୀଳନୀ – 1 (b)

1. (i) {1, 3, 5}, (ii) E, (iii) ϕ, (iv) E, (v) A, (vi) $(A \cap B)'$, (vii) $(A \cup B)'$, (viii) A Δ B,
   (ix) $(A \cup B) - (A \cap B)$, (x) ϕ, (xi) $A \cap B$ (xii) $A' \cap B'$;

2. ଠିକ୍ ଉକ୍ତି : (i) , (ii), (iv), (v), (vi) ; 3. (i) {±1, ±3, ±5, ...}, (ii) E ଓ ϕ (iii) 11;

ଅନୁଶୀଳନୀ - 1(c)

1. (a). (i) 12, (ii) 9, (iii) 3, (iv) 6, (v) 13, (vi) 4, (vii) 7, (viii) 12 ;
   (b). (i) x = –2, y = 3, (ii) x = 2, y = 3, (iii) x = ±2, y = ±3, (iv) x = 2, y = 1;
   (c). (i) {(1, 2), (1, 3), (1, 4), (2, 3), (2, 4), (3, 4)} (ii) {(2, 3)} ;

2. 15 ; 3. 90 ; 4 . 31 ; 5 . 30 ; 6 . 50 ; 7 . 35, 40 ; 8 . 5 ; 9 . 52 ; 10 . 11, 34 ; 11. 500 ; 12. 60,100;

ଅନୁଶୀଳନୀ - 2(a)

1. (i) T, (ii) T, (iii) F, (iv) F, (v) T, (vi)T, (vii) F, (viii) T, (ix) T, (x) F, (xi) T, (xii) F ;

2. (i) $-\dfrac{1}{2}$, (ii) $-\dfrac{1}{7}$, (iii) 0, (iv) 1 (କିମ୍ବା –1), (v) ଅପୁଗ୍ଗ, (vii) 2, (viii)3, (ix) ଯୋଗ, (x) 0, (xi) N, (xii) –1;

3. (i) d, (ii) a, (iii) c, (iv) a, (v) b, (vi) b, (vii) a, (viii) c, (ix) c ; 4. ନାହିଁ, କାରଣ 2 ଏକ ମୌଳିକ ସଂଖ୍ୟା;

8. ନାହିଁ, କାରଣ 7 + 5 = 12 ଓ ଏହା ଯୁଗ୍ମ; 9. 29, 50 ଓ 77; 10. ହଁ, କାରଣ ଏହା ଅସରନ୍ତି ପୌନଃପୁନିକ

ଦଶମିକରାଶି; 11. $\dfrac{131}{1000}$; 12. $0.\overline{3}$ 13. $q_1 = 300$, $p_2 = -34$, $\dfrac{6}{18}$; 14. ବଡ ସଂଖ୍ୟା = $\dfrac{-15}{15}$ ଓ ସାନ

ସଂଖ୍ୟା = $\dfrac{-15}{1}$; 15. $\dfrac{9}{40}, \dfrac{19}{80}, \dfrac{39}{160}$ ଓ $\dfrac{79}{320}$; 16. $-\dfrac{5}{12}, -\dfrac{11}{24}, -\dfrac{23}{48}$; 17. $3.\overline{857142}$; 19. (i) $\dfrac{1}{9}$

(ii) $\dfrac{1}{9}$ (iii) $\dfrac{89}{99}$ (iv) $\dfrac{37}{99}$, (v) $\dfrac{123}{999}$, (vi) $\dfrac{289}{900}$, (vii) $-\dfrac{49}{90}$, (viii) $\dfrac{69}{10}$, (ix) $-\dfrac{4}{33}$, (x) $\dfrac{641}{49500}$

20. (i) 1   (ii) 0 (iii) 1 (iv) 1 (v) $\dfrac{1}{3}$ (vi) 1 (vii) $\dfrac{1}{27}$

ଅନୁଶୀଳନୀ - 2(b)

1. (i) c, (ii) b, (iii) a, (iv) c, (v) a, (vi)d, (vii) d, (viii) b, (ix) c, (x) b, (xi) a, (xii) a, (xiii)d

2. (i), (ii), (iv), (vi), (ix), (x), (xii), (xiii), (xvi), (xvii) - ସତ୍ୟ;

3. (i), (ii), (iii), (iv), (v), (x), (xi) ...... ପରିମେୟ, ଅବଶିଷ୍ଟ ଅପରିମେୟ;

4. (i) $\frac{1}{2}$, (ii) $\frac{1}{\sqrt{2}}$, (iii) $-\sqrt{2}$, (iv) ଆସନ୍ନ, (v) $-4+\sqrt{3}$ (vi) 1 (କିୟା -1), (vii) $p \neq 0$, (viii) R, (ix) π, (x) 0; 5. (i) → (vii), (ii) → (ix), (iii) → (iii), (iv) → (ii), (v) → (iv), (vi) → (viii), (vii) → (vi), (viii) → (i), (ix) → (v);

6. (i) $\sqrt{2}$ ଓ $-\sqrt{2}$, (ii) $2\sqrt{2}$ ଓ $-1+\sqrt{2}$, (iii) $\sqrt{2}-1$ ଓ $\sqrt{2}+1$, (iv) $\sqrt{2}-1$ ଓ $\sqrt{2}+1$, (v) $\sqrt{2}$ ଓ $\sqrt{3}$ (vi) $\sqrt{2}$ ଓ $-\sqrt{2}$, (vii) $\sqrt{2}$ ଓ $\sqrt{6}$; 7. (i) 0, (ii) 1 (କିୟା -1) (iii) ନାହିଁ, କାରଣ ଏହା ହେବା ଅର୍ଥ 0 ଦ୍ୱାରା ଭାଗ କରିବା ଯାହା ଅସମ୍ଭବ, (iv) $\sqrt{2}+1$ ଓ $\sqrt{2}-1$, (v) $4+\sqrt{2}$ ଓ $3-\sqrt{2}$ (vi) ଉଭୟେ ଅସରନ୍ତି (କେବଳ ପରିମେୟର ଲବଟି ଯଦି 2 କିୟା 5 ଉତ୍ପାଦକ ବିଶିଷ୍ଟକୁ ଛାଡି – ଯେତେବେଳେ ରୂପଟି ସରନ୍ତି) ମାତ୍ର ପରିମେୟ କ୍ଷେତ୍ରରେ ପୌନଃପୁନିକ ମାତ୍ର ଅପରିମେୟ କ୍ଷେତ୍ରରେ ଅଣ ପୌନଃପୁନିକ ।

8. (i) $9\sqrt{2}$, (ii) $10\sqrt{2}$, (iii) 0, (iv) $18\sqrt{3}$; 9. (i) $\sqrt{10}$, (ii) 10, (iii) 7, (iv) 90

10. (i) $\frac{\sqrt{3}}{3}$, (ii) $\frac{\sqrt{2}}{6}$, (iii) $2-\sqrt{3}$, (iv) $\frac{(\sqrt{5}+1)}{4}$, (v) $\sqrt{3}-\sqrt{2}$; 11. ଅପରିମେୟ, କାରଣ ଏହା ଅସରନ୍ତି ଓ ଅଣ ପୁନଃ ପୁନିକ ଦଶମିକ । 12. (i) 7, (ii) 7.2, (iii) 2.4, (iv) 4π; 13. (i) $\frac{2(\sqrt{3}-2)}{3}$, (ii) $2(\sqrt{2}-1)$, (iii) $\frac{2(3-\sqrt{2})}{7}$, (iv) $\sqrt{2}-1$, (v) $\frac{5(3+\sqrt{2})}{7}$, (vi) $\sqrt{6}+\sqrt{3}-\sqrt{2}-2$, (vii) $\frac{\sqrt{10}-\sqrt{5}-\sqrt{2}+2}{3}$, (viii) $\frac{2+\sqrt{2}-\sqrt{6}}{4}$, (ix) $\frac{5\sqrt{6}-2\sqrt{15}-3\sqrt{10}+12}{12}$; 14.(i) 8, (ii) 12; 15.(i) 2, –1, (ii) $\frac{21}{11}, \frac{8}{11}$, (iii) $\frac{-7}{5}, -\frac{3}{5}$; 18. $2+4\sqrt{6}$; 20.(i)a, (ii) 3, (iii) 81; 21. (i) a–b, (ii) 1 – a, (iii) 1 – a, (iv) x+y, (v) $x^{-2}+x^{-1}y^{-1}+y^{-2}$; 22.(i) $x^{-\frac{1}{6}} y^{-\frac{1}{9}} z^{-\frac{2}{9}}$, (ii) $xy^{\frac{1}{3}}z^{\frac{1}{6}}$, 25. (i) 1, (ii) 1, (iii) $\frac{1}{2}$

28. (i) –4, 10 (ii) 10, –12, (iii) 2, –1, (iv) $\frac{1}{3}$, –3; 29. (i) $\frac{9}{4}-\frac{3\sqrt{5}}{4}$ (ii) $\frac{4}{7}-\frac{\sqrt{2}}{7}$ (iii) $2-\sqrt{3}$

30. (i) $-\frac{1}{2} < x < \frac{1}{2}$, (ii) $x < -1$ କିୟା $x > 1$ (iii) $-\frac{5}{3} \leq x \leq \frac{5}{3}$ (iv) $x \leq -\frac{3}{2}$ କିୟା $x \geq \frac{3}{2}$

(v) $-2 \leq x \leq \frac{8}{3}$ (vi) $x \leq -\frac{8}{7}$ କିୟା $x \geq \frac{2}{7}$

ଅନୁଶୀଳନୀ - 3 (a)

1. $\frac{11}{13} y^9$, $7y^8$, $-8y^4$, $1.4y^3$, $\sqrt{2} y^2$, $\sqrt{3} y$; 2. $12x^2$, $-5x^2$; $-3x$, $\frac{x}{7}$; $\frac{1}{\sqrt{2}} x^3$, $\sqrt{3} x^3$; 15, $\frac{8}{11}$; $10x^4$; 3. (i) –5, $\frac{2}{3}$ (ii) $2x^2$, $-\frac{4}{5} x^2$ (iii) $x^3 - 1$, $2x^3+5x$ (iv) $x^2 - 5x+2$, $2x^2 - 3x - 7$, (ଅନ୍ୟ ଉଦାହରଣ ମଧ ସମ୍ଭବ ।); 4. (i) $y^3 + 2y - 2$, (ii) $2x^4+x^3-3x^2-4$, (iii) $x^2 -1$, (iv) $4x^3 + 2 x^2 - x + 4$, (v)z^3+z^2+6z-5, (vi) $9xyz$, (vii) $x^2 + xy +3y^2$

ଅନୁଶୀଳନୀ - 3(b)

1. (i) 4, (ii) –4, (iii) $\frac{11}{4}$, (iv) 31; 2. (a) (i) –6, (ii) 5, (iii) –21, (iv) 60, (v) –3, (b) (i) –1

ଓ $-\frac{1}{3}$, (ii) $\frac{d}{c}$, (iii) $\frac{1}{2}$ ଓ $-\frac{1}{2}$, (iv) 1 ଓ –2 ;   3. (i) x + 3, (ii) x – 2, (iii) 2x – 1, (iv) 2x – 3;

4. (i) (iv) ; 5. (i) ଓ (iii) ; 6. (i) –2, (ii) $-\left(2+\sqrt{2}\right)$, (iii) $\sqrt{2}-1$, (iv) $-\frac{3}{2}$; 7. (i) 0, (ii) 9,

(iii) 11, (iv) –1; 8. (i) (x – 4) (x – 3), (ii) (x – 4) (x + 1), (iii) (x – 2) (x + 1) (x – 1), (iv)
(y – 1) (y² – 2)

ଅନୁଶୀଳନୀ - 3(c)

1. (i) (x–2) (x–1), (ii) x² – 4x+3, (iii) (x² + y²) (x + y) (x – y), (iv) (2a – b) (2a – b) (2a – b)
   (v) (25 + 5x² + x⁴) (25 – 5x² + x⁴) (vi) (1 – a + b) (vii) 6 (2x – 3y) (3y – 4z) (2z – x)
   (viii) 16380 (ix) 3 (a – b) (b – c) (c – a) (x) (x – 1)
2. (i) (2x+1) (x–1), (ii) (2x – 1) (x – 1), (iii) (5x + 4) (x – 1), (iv) (4x + 3) (x – 2)
   (v) (3x + 2) (x + 3) (vi) (7x – 6) (x + 1), (vii) (2x + 7) (x – 1)
   (viii) (4x – 1) (x – 1), (ix) (4x – 7) (b – c) (x + 1)
3. (i) (5a² + 4b) (5a² – 4b), (ii) (3 + 8pq) (3 – 8pq), (iii) (2x + 3y) (4x² – 6xy + 9y²),
   (iv) (2x – 3y) (4x² + 6xy – 9y²), (v) (a + b + 3) (a + b – 3) (vi) (2a + 9) (2a + 1)
   (vii) 3y (2x + y), (viii) (8a + p) (7p – 4a), (ix) 3 (12a – 3b + 5) (8a – 7b + 5),
   (x) (4a² + 2a + 1) (4a² – 2a + 1), (xi) p (p – 3q²) (p² + 3q² + 9q⁴),
   (xii) – (a + 1) (a² + 5a + 7), (xiii) (5 – 2x) (4x² – 8x + 7), (xiv) 5p²q (8p² + q³) (8p² – q³)
   (xv) (a + 3) (a² + 3a + 3), (xvi) (2x – 1) (4x² – 16x + 19), (xvii) (a + 2b) (a + 2b) (a+2b)
   (xviii) (a + 3) (a + 3) (a + 3), (xix) (2 – 3p) (2 – 3p) (2 – 3p) (xx) (b – c)(b – c) (b – c)
4. (i) (a² + a + 1) (a² – a + 1), (ii) (a²b² + ab + 1) (a²b² – ab + 1),
   (iii) (4a² + 6ab + 9b²) (4a² – 6ab + 9b²), (iv) (a⁴ – a² + 1) (a² + a + 1) (a² – a + 1),
   (v) (x² + 2x + 2) (x² – 2x + 2), (vi) 2 (a² + 2ab + 2b²) (a² – 2ab + 2b²),
   (vii) 9 (2a² + 2ab + b²) (2a² – 2ab + b²), (viii) (2a² + 3a + 4) (2a² – 3a + 4),
   (ix) (a² + 2ab + 3b²) (a² – 2ab + 3b²), (x) (a² + a – 1) (a² – a – 1),
   (xi) (5a² + 7ab + 3b²) (5a² – 7ab + 3b²), (xii) (3x + y + 2z) (3x + y – 2z),
   (xiii) (4 – 3y + x) (4 + 3y – x), (xiv) (ax – by + ay + bx) (ax – by – ay – bx)
   (xv) {x (a – b) + y (a + b)} {x (a – b) – y (a + b)};
5. (i) (a + b + x) (a² + b² + x² – ab – bx – ax), (ii) (2a + b + c) (4a²+b²+c²–2ab–bc–2ac),
   (iii) (a + b – 2) (a² + b² + 4 – ab + 2b + 2a), (iv) (l – 3m – n) (l² +9m²+n²+3lm–3mn+ln),
   (v) 2a [(a – b) + (b – c)² + (c – a)²], (vi) (a² + a – 1) (a⁴ – a³ + 2a² + a + 1)
   (vii) (x + 6) (x² – 6x + 12), (viii) (m – 1) (m + 2) (m⁴ – m³ + 3m² + 2m + 4)

   (ix) $\left(a^2+\frac{1}{a^2}-2\right)\left(a^4+a^2+\frac{1}{a^2}+\frac{1}{a^4}\right)$, (x) (r² + 3r – 2) (r⁴ – 3r³ + 11r² + 6r + 4)

   (xi) 2 (2x – 3y² – z) (4x²+ 9y⁴ + z² + 6xy² + 2xz – 3y²z); (xii) $\left(a+b-\frac{1}{3}c\right)$

   $\left(a^2+b^2+\frac{1}{9}c^2-ab+\frac{ac}{3}+\frac{bc}{3}\right)$, (xiii) (3a – 2b² + 5c) (9a² + 4b⁴ + 25c² + 6ab² + 10b²c – 15ac)
   (xiv) –3 (2x + 3) (3x – 2) (5x + 1);   7. 3 (x – y) (y – z) (z – x)

ଅନୁଶୀଳନୀ - 3 (d)

1. (i) xy, (ii) $2a^2b^2$, (iii) $3ab^2c$, (iv) xy, (v) $36x^3y^6z^6$; 2. (i) x+1, (ii) a–b, (iii) 2a –b, (iv) $(x–1)^2$, (v) $x^2 –xy + y^2$, (vi) 2(a –2b), (vii) x + 4, (viii) 2x + 3, (ix) a + b + c, (x) a + b + c, (xi) a – b, (xii) x – b; 3. (i) $12a^3b$, (ii) $12a^3b^4$, (iii) $340a^3b^3c^5$, (iv) $12a^2b^2$ (v) $150x^3y^3z^3$; 4. (i) ab(a+b)(a–b), (ii) 12x(x+y)(x –y), (iii) xy(x+y) $(x^2–xy+y^2)$, (iv) $24a^2b$ (a– 2b) $(a^2 +2ab+4b^2)$, (v) $(x+y)(x–y)^3$, (vi) $x(x+y)(x–y)^2$, (vii) $24(a+b)^2(a–b)^2$ (viii) $(2x –1)^2$ (x+3), (ix) a(a+2)(3a+2), (x) x $(2x–3)^2$ (3x+2), (xi) 2x(x+2) (3x+1)(3x –1), (xii) (x+y) (y+z) (z+x), (xiii) (a–b) (b –c) (c–a), (xiv) (a + b + c) (a –b – c) (c – a– b), (xv) (a+b) (a–b) $(a^2 + ab + b^2)$ $(a^2–ab + b^2)$, (xvi) $(a+b)^3$ (a–b) (a^2+ab+b^2) $(a^2 –ab+b^2)$ (xvii) 3(x–y) (y –z) (z –x)

ଅନୁଶୀଳନୀ - 3 (e)

1. (i) ✗ (ii) ✗ (iii) ✔ (iv) ✗ (v) ✔ (vi) ✗ ; 2. (i) $\dfrac{2x}{x^2 - y^2}$ (ii) $\dfrac{x^2 + y^2}{x^2 - y^2}$ (iii) 0 (iv) $\dfrac{4xy}{y^2 - x^2}$

(v) $\dfrac{-2y}{(x + y)(x - y)^2}$ (vi) $\dfrac{b^2}{a + b}$ (vii) 0 (viii) $\dfrac{a^2 + b^2}{a^2 - b^2}$ (ix) $\dfrac{6(x^2 - 2)}{(x^2 -1)(x^2 -4)}$ (x) $\dfrac{x^2}{6(x+3)(x-3)}$

3. (i) $\dfrac{x^2y^2z^2}{abc}$,(ii) $\dfrac{x}{y(x + y)}$, (iii) 1, (iv) $\dfrac{(x - 5)(x^2 - 2x + 4)}{(x - 7)(x^2 + 2x + 4)}$, (v) $\dfrac{y^6 - x^6}{y^6}$, (vi) $\dfrac{x^2(z + x)}{y}$

(vii) $\dfrac{2ab}{a^2 +b^2}$ (viii) 1 (ix) xy (x) $\dfrac{a-b}{a}$ (xi) $\dfrac{(a-3)(a-7)}{(a-2)(a-6)}$; 4.(i) $\dfrac{2x+1}{3x+2}$, (ii) a^2, (iii) y,(iv) $\dfrac{x^3}{x^3-x-1}$

ଅନୁଶୀଳନୀ - 4(a)

1. (i) ସମସ୍ତ ମାନ (ii) 3, (iii) 2, (iv) –1, (v) 8, (vi) 2; 2. (i) ଓ (iv) ଅଭେଦ ; (ii) , (iii) ଓ (v) - ସଙ୍ଗତ; (vi) ଅସଙ୍ଗତ ; ii, iii ଅନୁରୂପ [(ii) 3, (iii) 3, (v) 3b – 4]; 3. (i) 3, (ii) –30, (iii) 3b – 2a, (iv) 3, (v) 11, (vi) 4; 4. (i) –6 (ii) 6, (iii) 12, (iv) 2, (v) $\dfrac{15}{17}$, (vi) 10, 5. (i) –7, (ii) 2, (iii) –1, (iv) $-\dfrac{6}{13}$, (v) $-\dfrac{19}{25}$, (vi) 1

ଅନୁଶୀଳନୀ - 4(b)

1. (iii) ବ୍ୟତୀତ ଅନ୍ୟ ସମସ୍ତ ଦ୍ୱିଘାତ ସମୀକରଣ, 2. (i) 0 ଓ 3 (ii) 2 ଓ –2, (iii) 1 ଓ 2, (iv) $\sqrt{2}$ ଓ $-2\sqrt{2}$, (v) –1 ଓ 2; 3. (i) 14 ଓ –14 (ii) 0 ଓ $\dfrac{2}{5}$, (iii) 2 ଓ 1, (iv) 4 ଓ –7, (v) $\sqrt{3}, -\dfrac{2}{\sqrt{3}}$, (vi) 3 ଓ $-\dfrac{1}{2}$, (vii) a ଓ –2a, (viii) – (a + b) ଓ b – a; 4. (i) 3 ଓ $\dfrac{5}{2}$ (ii) 4 ଓ $-\dfrac{2}{3}$, (iii) –9 ଓ –2, (iv) 1 ଓ –2; 5. (i) 12, 4, (ii) –2, –3

ଅନୁଶୀଳନୀ - 4(c)

1. 10, 11; 2. 0, 1 3. 42, 9 4. 3, 4, 5 5. 15, 8 6. 4, $\dfrac{1}{4}$

7. 22, 14 8. 18 9. 5, 6, 7 10. 11, 13 11. 6, 8 12. 12 କି.ମି. 13. 9, 5

14. 19, 7 15. 48, 32 16. 5 କି.ମି 17. 36

<div align="center">

ଅନୁଶୀଳନୀ - 4(d)

</div>

1. (ii), (iv) ଓ (vi) : ଘାତାଙ୍କୀୟ ସମୀକରଣ; 2. (i) $\dfrac{3}{2}$, (ii) –4, (iii) 3, (iv) $\dfrac{1}{3}$, (v) 2, (vi)–4; 3. (i) 2,

(ii) 2, (iii) $\dfrac{3}{2}$, (iv) $\dfrac{3}{2}$; 4. (i) 15, (ii) $\dfrac{1}{2}$, (iii) $\dfrac{3}{2}$, (iv) – 4, (v) $\dfrac{1}{2}$, (vi) 1, (vii) 2, (viii) 1, (ix) 3,

(x) 1 ଓ 2

<div align="center">

ଅନୁଶୀଳନୀ - 5(a)

</div>

3. (i) ଏକ, (ii) ଦୁଇ, (iii) Rene Descartes, (iv) 4, (v) $\overrightarrow{OX}$, (vi) $\overrightarrow{OY'}$, (vii) ବୀଜଗଣିତ (viii) 5, 4

5. (i) Q_4 (ii) Q_2 (iii) Q_3 (iv) ଅଧଃ, (v) ବାମ, (vi) Q_3

<div align="center">

ଅନୁଶୀଳନୀ - 5(b)

</div>

1. (i) ax + by + c = 0 (a ≠ 0) (b ≠ 0), (ii) ସରଳରେଖା, (iii) y = 0, (iv) x = 0, (v) x = 3,

   (vi) y= –2, (vii) y = mx, (viii) ନୁହେଁ, (ix) ହଁ, (x) (0, 0); 2. (i) $-\dfrac{1}{2}$, $-\dfrac{7}{4}$, (ii) $\dfrac{1}{2}$, $\dfrac{5}{2}$, (iii) $\dfrac{3}{4}$, 0

3. (i) ଓ (iv);   4. (i) 1, (ii) $\dfrac{5}{6}$, (iii) 1, (iv) –5, (v) 1, (vi) –1

<div align="center">

ଅନୁଶୀଳନୀ - 5(c)

</div>

5. (3, 0), (0, 2); 7. (3, 4), (–3, 4), (–3, –4), (3, –4); 9. (1, –1) (–2, –2), 10. (–3, –1)

<div align="center">

ଅନୁଶୀଳନୀ - 6

</div>

1.   (i) 55:72 (ii) $\dfrac{8}{125}$ (iii)q:s   (iv) 11:13 (v) 6:4:3 (vi) 6:15:20 (vii)k=1

2.   (i) (ii) (vii) ଭୁଲ୍ ଉକ୍ତି, ଅବଶିଷ୍ଟ ଠିକ୍ ଉକ୍ତି । 3. (i) 21,   (ii) 0.0001, (iii) a^3b^3, (iv)1

      (v)12   (vi) $a^2–ab+b^2$ । 4. (i) 25 (ii) b^3 (iii) $\dfrac{x + y}{x - y}$ (iv) ab

5.   (i) ±15 (ii) ± 6abc   (iii)$(a^2–b^2)^2$ 6.   (i) a = –1   (ii) x = 3

7.   (i) 8; (ii)2; (iii)1; (iv)2; 8.(i) 8:23; (ii) 38:31; (iii) 245, 196, 140   (iv) –11 : 1 (v) 5:13

15.   ସ୍ଥିର 14 ବର୍ଷ ଓ ସୁନିଲ୍‌ର 12 ବର୍ଷ । 16. ଅନିଲ୍‌ର 16 ବର୍ଷ ଓ ସୁନିଲ୍‌ର 24 ବର୍ଷ ।   17. 32 ଜଣ ।

18.   5 ଲିଟର   19. B ର ଆୟ 6000 ଟଙ୍କା   21. 35, 40, 45,   22. 7:11;

23.   (i) $-\dfrac{3}{2}$ (ii) 8   (iii) $\dfrac{2ab}{b^2 +1}$

<div align="center">

ଅନୁଶୀଳନୀ - 7 (a)

</div>

1.	ଲବ୍‌ଧାଙ୍କ	10	11	12	13	14	15	16	17	18
	ରାଶିକୃତ ବାରମ୍ବାରତା	5	13	30	59	100	136	163	179	189

2.	ଲବ୍‌ଧାଙ୍କ	1	2	3	4	5	6	7	8
	ବାରମ୍ବାରତା	5	8	12	18	13	10	7	4

3.   (b) (i) 158 ସେ.ମି., (ii) 3 ଜଣ (iii) 170, (iv) 24, (v) 9; 4. (i) 27 (ii) A – 2, B – 11,

      C – 14, D – 3, E – 0; 5. (c) (i) 42, (ii) 93 (iii) 73 (iv) 30

<div align="center">

</div>

ଅନୁଶୀଳନୀ - 7 (b)

1. (a) 32, 8 (b) 24 (d) 5 (e) (15 –19) (f) (5 –9)

2. (a) 120,127 (b) 107 (d) 10 (e) (150 – 160) (f) (130 –140) ଏବଂ (180 – 190)

(g) (220 – 230) 3. ସଂଭାଗ ବିସ୍ତାର, 10 ଏବଂ ସଂଭାଗମାନ (20 – 30), (30 – 40), ... (80 – 90)

4.

ସଂଭାଗ	0 - 9	10-19	20-29	30-39	40-49
ରାଶିକୃତ ବାରମ୍ବାରତା	8	21	42	57	63

39ର ରାଶିକୃତ ବାରମ୍ବାରତା 57

5. (a)

ସଂଭାଗ	0 -9	10-19	20-29	30-39	40-49	50- 59	60-69
ରାଶିକୃତ ବାରମ୍ବାରତା	5	9	14	24	32	37	40

(b) 24 (c) (30-39)   (d) (60-69)

6.   (i) 27 (ii) 65 (iii) 89 (iv) 19

ଅନୁଶୀଳନୀ - 8 (a)

1. {H, T}, 2. {1, 2, 3, 4, 5, 6}, 3. $\frac{1}{2}$; 4. 1; 5. $\frac{1}{4}$, 6. (i) $\frac{1}{5}$, (ii) $\frac{4}{5}$; 7. $\frac{61}{366}$, 8.(i) $\frac{475}{1000}$,

(ii) $\frac{814}{1000}$, (iii) $\frac{211}{1000}$; 9.(i) $\frac{60}{500}$, (ii) $\frac{180}{500}$, (iii) $\frac{195}{500}$, (iv) $\frac{65}{500}$

ଅନୁଶୀଳନୀ - 8 (b)

1. { H,T}, {HH, HT, TH, TT}, 2. {1, 2, 3, 4, 5, 6}, 3. $\frac{1}{2}$, 4. $\frac{1}{2}$, 5. {1,2,3,4,5,6},{1,2,3,4}

6.(i) $\frac{1}{6}$, (ii) $\frac{1}{2}$, (iii) $\frac{1}{2}$, (iv) $\frac{2}{3}$, 7.(i) $\frac{1}{5}$, (ii) $\frac{3}{5}$, 8.(i) $\frac{2}{5}$, (ii) $\frac{7}{15}$