

نام  
درجہ  
کامی  
غلام فی  
ثانیہ الف  
ریاضی  
جامعۃ المدینہ ڈیڑہ اللہ یار

صَلَّى اللّٰهُ عَلٰى مُحَمَّدٍ صَلَّى اللّٰهُ عَلَيْهِ وَسَلَّمَ

2-1

مشتق نمبر 1

حقیقی اعداد کے خواص کے نام لکھیں

$$i) a + \sqrt{2} = \sqrt{2} + a$$

$$(i) 4 \times \sqrt{11} = \sqrt{11} + 4$$

Ans خاصیت مساوی بلحاظ جمع

Ans خاصیت مساوی بلحاظ ضرب

$$ii) a - a = 0$$

$$(v) \left(\frac{\sqrt{2}}{3}\right) \times 1 = \frac{\sqrt{2}}{3}$$

Ans = جمع معکوس

ضرب ذاتی معکوس

$$iii) (a+2) + \sqrt{2} = a + (2 + \sqrt{2})$$

$$(vi) (6 \cdot 2) \times \frac{1}{(6 \cdot 2)} = 1$$

خاصیت ملازم بلحاظ جمع

ضرب معکوس

کیا نیچے دیئے گئے سیٹ خاصیت بندش بلیاؤ جمع یا ضرب رکھتے ہیں؟

(i)  $\{0, 1\}$  (ii)  $\{0, 1, 2\}$

خاصیت بندش بلیاؤ ضرب اور بلیاؤ جمع نہیں رکھتا۔ خاصیت بندش بلیاؤ ضرب رکھتا ہے جمع نہیں

(iii)  $\{0\}$

خاصیت بندش بلیاؤ جمع اور بلیاؤ ضرب دونوں رکھتا ہے

(iv)  $\{2, -\sqrt{2}, \sqrt{2}, 1, -1, 0\}$

خاصیت بندش بلیاؤ ضرب اور جمع دونوں نہیں رکھتا۔

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

خاصیت بندش بلیاؤ جمع اور ضرب دونوں رکھتا ہے۔

ممکن ہوتو عند رتبہ ذیل کے جمع اور ضربی معکوس لکھیں (اگر ممکن نہیں تو

(i) 25 (ii) -75 وجہ بتائیں :-

جمع معکوس = 75 جمع معکوس = -25

ضربی معکوس =  $\frac{1}{75}$  ضربی معکوس =  $\frac{1}{25}$  Ans

(iii)  $\sqrt{2}$  (iv)  $\frac{1}{\sqrt{5}}$

جمع معکوس =  $\frac{1}{\sqrt{5}}$  جمع معکوس =  $-\sqrt{2}$

ضربی معکوس =  $\sqrt{5}$  Ans ضربی معکوس =  $\frac{1}{\sqrt{2}}$

"0"

$$(vi) \sqrt{8}$$

جمعی ضربی معکوس ممکن نہیں

$$-\sqrt{8} =$$

جمعی معکوس =

$$\frac{1}{\sqrt{8}}$$

ضربی معکوس =

4 دیکھ گئے سیشنوں سے جمعی اور ضربی معکوس ممکن ہیں؟

R

Ans جمعی اور ضربی معکوس ممکن نہیں

Z<sup>+</sup>

Ans جمعی اور ضربی معکوس ممکن نہیں

$$Q - \{0\}$$

Ans جمعی اور ضربی معکوس ممکن ہے

W

جمعی اور ضربی معکوس ممکن نہیں

5 عند درجہ ذیل اعداد کو نمبر لائن پر ظاہر کریں

$$3 \frac{2}{3}$$

$$\frac{11}{3} \Rightarrow 3.6$$

۵۔ مندرجہ ذیل میں حقیقی اعداد کی کونسی خاصیتیں استعمال کی گئی ہیں۔

$$i) -6 < 5 \Rightarrow 0 < 11$$

$$-6 < 5 \Rightarrow 0 < 11$$

Ans. معی خاصیت

$$ii) x = y \Rightarrow x + z = y + z$$

معی خاصیت

$$iii) 7 > 3 \Rightarrow \frac{1}{3} > \frac{1}{7}$$

عربی خاصیت

$$iii) 8 < 10 \Rightarrow -24 > -30$$

عربی خاصیت

$$iv) x + z = y + z \Rightarrow x = y$$

تنسیخی خاصیت یا محافظ جمع

$$vi) 3x = 3y \Rightarrow x = y$$

عرب کا تنسیخی قانون

عشقِ ظہیر 501

1. اگر  $C = \{2, 5, 7, 9\}$  اور  $D = \{9, 12, 13, 15\}$  ہوں تو معلوم کریں

(i)  $C \cup D$

$$C = \{2, 5, 7, 9\} \cup D = \{9, 12, 13, 15\}$$

$$C \cup D = \{2, 5, 7, 9, 12, 13, 15\} \text{ Ans}$$

(ii)  $C \cap D$

$$C = \{2, 5, 7, 9\} \cap D = \{9, 12, 13, 15\}$$

$$C \cap D = \{9\} \text{ Ans}$$

(iii)  $D \setminus C$

$$D = \{9, 12, 13, 15\} \setminus C = \{2, 5, 7, 9\}$$

$$D \setminus C = \{12, 13, 15\} \text{ Ans}$$

(iv)  $C \setminus D$

$$C = \{2, 5, 7, 9\} \setminus D = \{9, 12, 13, 15\}$$

$$C \setminus D = \{2, 5, 7\} \text{ Ans}$$

سوال 2  
A = 10 مثبت طاق اعداد کا سیٹ

B = 12 قدرتی اعداد کا سیٹ

$$A = \{1, 3, 5, \dots, 19\} \quad B = \{1, 2, 3, \dots, 12\}$$

$A \cup B$

$$A = \{1, 3, 5, \dots, 19\} \cup B = \{1, 2, 3, 4, \dots, 12\}$$

$$A \cup B = \{1, 2, 3, 4, \dots, 19\} \text{ Ans}$$

$A - B$

$$A = \{1, 3, 5, \dots, 19\} - B = \{1, 2, 3, 4, \dots, 12\}$$

$$A - B = \{13, 15, 17, 19\} \text{ Ans}$$

$A \cap B$

$$A = \{1, 3, 5, \dots, 19\} \cap B = \{1, 2, 3, \dots, 12\}$$

$$A \cap B = \{1, 3, 5, 7, 9, 11\} \text{ Ans}$$

$B - A$

$$B = \{1, 2, 3, \dots, 12\} - A = \{1, 3, 5, \dots, 19\}$$

$$B - A = \{2, 4, 6, 8, 10, 12\} \text{ Ans}$$

$$E = \{x \mid x \in \mathbb{O} \wedge 5 \leq x \leq 20\} \cup \{x \mid x \in \mathbb{N} \wedge 5 \leq x < 20\} \quad \text{س 3 اگر}$$

$$F = \{x \mid x \in \mathbb{E} \wedge 5 \leq x \leq 20\}$$

(i)  $E \setminus F$

$$E = \{6, 8, 10, 12, \dots, 20\} \setminus F = \{$$

$$E = \{5, 7, 9, \dots, 19\} \mid F = \{6, 8, 10, \dots, 20\}$$

$$E \setminus F = \{5, 7, 9, \dots, 19\} \text{ ANS}$$

$$(ii) F \setminus E$$

$$F = \{6, 8, 10, \dots, 20\} \mid E = \{5, 7, 9, \dots, 19\}$$

$$F \setminus E = \{6, 8, 10, \dots, 20\} \text{ ANS}$$

$$(iii) E^c$$

$$U = \{5, 6, 7, 8, \dots, 20\} - E = \{5, 7, 9, \dots, 19\}$$

$$E^c = \{6, 8, 10, \dots, 20\} \text{ ANS.}$$

$$(iv) F^c$$

$$U = \{5, 6, 7, 8, \dots, 20\} - F = \{6, 8, 10, \dots, 20\}$$

$$F^c = \{5, 7, 9, \dots, 19\} \text{ ANS}$$

$$(v) (E \cup F)^c$$

$$E = \{5, 7, 9, \dots, 19\} \mid F = \{6, 8, 10, \dots, 20\}$$

$$E \cup F = \{5, 6, 7, 8, \dots, 20\}$$

$$U = \{5, 6, 7, 8, \dots, 20\} - E \cup F = \{5, 6, 7, 8, \dots, 20\}$$

$$(E \cup F)^c = \{ \} \text{ ANS}$$

$$(vi) (E \cap F)^c$$

$$E = \{5, 7, 9, \dots, 19\} \cap F = \{6, 8, 10, \dots, 20\}$$

$$E \cap F = \{ \}$$

$$U = \{5, 6, 7, 8, \dots, 20\} - E \cap F = \{ \}$$

$$(E \cap F)^c = \{5, 6, 8, \dots, 20\} \text{ Ans}$$

$$(vii) E^c \cup F^c$$

$$U = \{5, 6, 7, \dots, 20\} - E = \{5, 7, 9, \dots, 19\}$$

$$E^c = \{6, 8, 10, \dots, 20\}$$

$$U = \{5, 6, 7, \dots, 20\} - F = \{6, 8, 10, \dots, 20\}$$

$$F^c = \{5, 7, 9, \dots, 19\}$$

$$E^c \cup F^c = \{5, 6, 7, \dots, 20\} \text{ Ans}$$

$$(viii) E^c \cap F^c$$

$$U = \{5, 6, 7, \dots, 20\} - E = \{5, 7, 9, \dots, 19\}$$

$$E^c = \{6, 8, 10, \dots, 20\}$$

$$U = \{5, 6, 7, \dots, 20\} - F = \{6, 8, 10, \dots, 20\}$$

$$F^c = \{5, 7, 9, \dots, 19\}$$

$$E^c = \{6, 8, 10, \dots, 20\} \cap F^c = \{5, 7, 9, \dots, 19\}$$
$$E^c \cap F^c = \{ \} \text{ Ans.}$$

مشق نمبر

Ad

## مشق نمبر 5.2

1 اگر  $A = \{1, 2, 3, 4, 5\}$ ،  $B = \{4, 5, 6, 7, 8\}$  اور  $C = \{7, 8, 9, 10, 11\}$  ہو تو معلوم کریں

i)  $A \cup (B \cap C)$

$$B = \{4, 5, 6, 7, 8\} \cup C = \{7, 8, 9, 10, 11\}$$

$$B \cup C = \{4, 5, 6, 7, 8, 9, 10, 11\}$$

$$A = \{1, 2, 3, 4, 5\} \cup (B \cup C) = \{1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11\}$$

$$A \cup (B \cup C) = \{1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11\} \text{ Ans}$$

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

$$A = \{1, 2, 3, 4, 5\} \cup B = \{4, 5, 6, 7, 8\}$$

$$A \cup B = \{1, 2, 3, 4, 5, 6, 7, 8\}$$

$$C = \{7, 8, 9, 10, 11\} \cup (A \cup B) = \{1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11\}$$

$$(A \cup B) \cup C = \{1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11\} \text{ Ans}$$

iii)  $A \cap (B \cap C)$

$$B = \{4, 5, 6, 7, 8\} \cap C = \{7, 8, 9, 10, 11\}$$

$$B \cap C = \{7, 8\}$$

$$A = \{1, 2, 3, 4, 5\} \cap (B \cap C) = \{7, 8\}$$

$$A \cap (B \cap C) = \{7, 8\} \text{ Ans}$$

$$\text{iv) } (A \cap B) \cap C$$

$$A = \{1, 2, 3, 4, 5\} \cap B = \{4, 5, 6, 7, 8\}$$

$$A \cap B = \{4, 5\}$$

$$A \cap B = \{4, 5\} \cap C = \{7, 8, 9, 10, 11\}$$

$$(A \cap B) \cap C = \{ \} \text{ Ans}$$

$$\text{v) } A \cup (B \cap C)$$

$$B = \{4, 5, 6, 7, 8\} \cap C = \{7, 8, 9, 10, 11\}$$

$$B \cap C = \{7, 8\}$$

$$A = \{1, 2, 3, 4, 5\} \cup (B \cap C) = \{7, 8\}$$

$$A \cup (B \cap C) = \{1, 2, 3, 4, 5, 7, 8\} \text{ Ans}$$

$$\text{vi) } A \cap (B \cup C)$$

$$B = \{4, 5, 6, 7, 8\} \cup C = \{7, 8, 9, 10, 11\}$$

$$B \cup C = \{4, 5, 6, 7, 8, 9, 10, 11\}$$

$$A = \{1, 2, 3, 4, 5\} \cap (B \cup C) = \{4, 5, 6, 7, 8, 9, 10, 11\}$$

$$A \cap (B \cup C) = \{4, 5\} \text{ Ans}$$

$$(vii) (A \cup B) \cap (A \cup C)$$

$$A = \{1, 2, 3, 4, 5\} \cup B = \{4, 5, 6, 7, 8\}$$

$$A \cup B = \{1, 2, 3, 4, 5, 6, 7, 8\}$$

$$A = \{1, 2, 3, 4, 5\} \cup C = \{7, 8, 9, 10, 11\}$$

$$A \cup C = \{1, 2, 3, 4, 5, 7, 8, 9, 10, 11\}$$

$$A \cup B = \{1, 2, 3, 4, 5, 6, 7, 8\} \cap (A \cup C) = \{1, 2, 3, 4, 5, 7, 8\}$$

$$(A \cup B) \cap (A \cup C) = \{1, 2, 3, 4, 5, 7, 8\} \text{ Ans.}$$

$$(viii) (A \cap B) \cup (A \cap C)$$

$$A = \{1, 2, 3, 4, 5\} \cap B = \{4, 5, 6, 7, 8\}$$

$$A \cap B = \{4, 5\}$$

$$A = \{1, 2, 3, 4, 5\} \cap C = \{7, 8, 9, 10, 11\}$$

$$A \cap C = \{ \}$$

$$A \cap B = \{4, 5\} \cup (A \cap C) = \{4, 5\}$$

$$(A \cap B) \cup (A \cap C) = \{4, 5\}$$

2  
اگر  $U = \{21, 22, 23, \dots, 40\}$ ،  $X = \{21, 23, 25, \dots, 39\}$  اور  $Y = \{22, 24, 26, \dots, 40\}$  ہو تو درجہ ذیل معلوم کریں۔

i)  $(X \cup Y)^c$

$$X = \{21, 23, 25, \dots, 39\} \cup Y = \{22, 24, 26, \dots, 40\}$$

$$X \cup Y = \{21, 22, 23, \dots, 40\}$$

$$U = \{21, 22, 23, \dots, 40\} - (X \cup Y) = \{21, 22, 23, \dots, 40\}$$

$$(X \cup Y)^c = \{ \} \text{ Ans}$$

ii)  $(X \cap Y)^c$

$$X = \{21, 23, 25, \dots, 39\} \cap Y = \{22, 24, 26, \dots, 40\}$$

$$X \cap Y = \{ \}$$

$$U = \{21, 22, 23, \dots, 40\} - (X \cap Y) = \{21, 22, 23, \dots, 40\}$$

$$(X \cap Y)^c = \{21, 22, 23, \dots, 40\} \text{ Ans}$$

iii)  $X^c \cap Y^c$

$$U = \{21, 22, 23, \dots, 40\} - X = \{21, 23, 25, \dots, 39\}$$

$$X^c = \{22, 24, 26, \dots, 40\}$$

$$U = \{21, 22, 23, \dots, 40\} - Y = \{22, 24, 26, \dots, 40\}$$

$$Y^c = \{21, 23, 25, \dots, 39\}$$

$$X^c = \{22, 24, 26, \dots, 40\} \cap Y^c = \{21, 23, 25, \dots, 39\}$$

$$X^c \cap Y^c = \{\} \text{ Ans.}$$

$$(ii) X^c \cup Y^c$$

$$U = \{21, 22, 23, \dots, 40\} - X = \{21, 23, 25, \dots, 39\}$$

$$X^c = \{22, 24, 26, \dots, 40\}$$

$$U = \{21, 22, 23, \dots, 40\} - Y = \{22, 24, 26, \dots, 40\}$$

$$Y^c = \{21, 23, \dots, 39\}$$

$$X^c \cup Y^c = \{22, 24, 26, \dots, 40\} \cup \{21, 23, 25, \dots, 39\}$$

$$X^c \cup Y^c = \{21, 22, 23, \dots, 40\} \text{ Ans}$$

$$(iii) (X - Y)^c$$

$$X = \{21, 23, 25, \dots, 39\} - Y = \{22, 24, 26, \dots, 40\}$$

$$X - Y = \{21, 23, 25, \dots, 39\}$$

$$U = \{21, 22, 23, \dots, 40\} - (X - Y) = \{21, 23, 25, \dots, 39\}$$

$$(X - Y)^c = \{22, 24, 26, \dots, 40\} \text{ Ans}$$

$$(vi) (Y-X)^c$$

$$Y = \{22, 24, 26, \dots, 40\} - X = \{21, 23, 25, \dots, 39\}$$

$$Y-X = \{22, 24, 26, \dots, 40\}$$

$$U = \{21, 22, 23, \dots, 40\} - (Y-X) = \{21, 23, 25, \dots, 39\}$$

$$(Y-X)^c = \{21, 23, 25, \dots, 39\} \text{ Ans}$$

$$C = \{11, 13, 15, \dots, 29\} \cdot U = \{11, 12, 13, \dots, 30\} \text{ اگر } -3$$

$$D = \{12, 14, 16, \dots, 30\} \text{ تو ثابت کریں۔}$$

$$(i) C-D = C \cap D^c$$

$$C = \{11, 13, 15, \dots, 29\} - D = \{12, 14, 16, \dots, 30\}$$

$$C-D = \{11, 13, 15, \dots, 29\}$$

$$U = \{12, 14, 16, \dots, 30\} - D = \{12, 14, 16, \dots, 30\}$$

$$D^c = \{ \}$$

$$C = \{11, 13, 15, \dots, 29\} \cap D^c = \{ \}$$

$$C \cap D^c = \{11, 13, 15, \dots, 29\}$$

✓ L.H.S = R.H.S <sup>تو ثابت</sup>

$$iii) D - C = D \cap C^c$$

$$D = \{12, 14, 16, \dots, 30\} - C = \{11, 13, 15, \dots, 29\}$$

$$D - C = \{12, 14, 16, \dots, 30\}$$

$$U = \{11, 12, 13, \dots, 30\} - C = \{11, 13, 15, \dots, 29\}$$

$$C^c = \{12, 14, 16, \dots, 30\}$$

$$D \cap C^c = \{12, 14, 16, \dots, 30\}$$

- L.H.S = R.H.S پس ثابت ہو گیا

نمونہ کو ثابت کرنے کے لیے  $B = \{0, 1\}$   $A = \emptyset$   $U = \{0, 1, 2, 3, 4\}$  4

$$ii) (A \cup B)^c = A^c \cap B^c$$

$$A = \{ \} \cup B = \{0, 1\}$$

$$A \cup B = \{0, 1\}$$

$$U = \{0, 1, 2, 3, 4\} - (A \cup B) = \{2, 3, 4\}$$

$$A \cup B^c = \{2, 3, 4\} \quad \text{L.H.S.}$$

$$U = \{0, 1, 2, 3, 4\} - A = \{ \}$$

$$A^c = \{0, 1, 2, 3, 4\}$$

$$U = \{0, 1, 2, 3, 4\} - B = \{2, 3, 4\}$$

$$B^c = \{2, 3, 4\}$$

$$A^c = \{0, 1, 2, 3, 4\} \cap B^c = \{2, 3, 4\}$$

$$A^c \cap B^c = \{2, 3, 4\}$$

← L.H.S = R.H.S پس ثابت ہوا

$$(i) (A \cap B)^c = A^c \cup B^c$$

$$A = \{ \} \cap B = \{0, 1\}$$

$$A \cap B = \{ \}$$

$$U = \{0, 1, 2, 3, 4\} - (A \cap B) = \{0, 1\}$$

$$(A \cap B)^c = \{0, 1, 2, 3, 4\}$$

$$U = \{0, 1, 2, 3, 4\} - A = \{ \}$$

$$A^c = \{0, 1, 2, 3, 4\}$$

$$U = \{0, 1, 2, 3, 4\} - B = \{2, 3, 4\}$$

$$B^c = \{2, 3, 4\}$$

$$A^c \cup B^c = \{0, 1, 2, 3, 4\} \cup \{2, 3, 4\}$$

$$A^c \cup B^c = \{0, 1, 2, 3, 4\}$$

← L.H.S = R.H.S پس

مشق نمبر 5.4

سوال اگر  $X = \{a, b, c, d\}$ ،  $Y = \{e, f\}$  ہو تو  $X \times Y$  اور  $Y \times X$  معلوم کریں۔  
 $X \times Y$

$$X = \{a, b, c, d\} \times \{e, f\}$$

$(a, e), (a, f), (b, e), (b, f), (c, e), (c, f), (d, e), (d, f)$

$$Y \times X$$

$$Y = \{e, f\} \times \{a, b, c, d\}$$

$(e, a), (e, b), (e, c), (e, d), (f, a), (f, b), (f, c), (f, d)$

سوال اگر  $A = \{0, 1, 2\}$ ،  $B = \{-2, -1, 0, 1\}$  ہو تو  $A \times B$ ،  $B \times A$  اور  $A \times A$  معلوم کریں۔  
 $B \times A$   $A \times B$   $A \times A$

$$A \times A$$

$$A = \{0, 1, 2\} \times \{0, 1, 2\}$$

$(0, 0), (0, 1), (0, 2), (1, 0), (1, 1), (1, 2), (2, 0), (2, 1), (2, 2)$

$$A \times B$$

$$A = \{0, 1, 2\} \times \{-2, -1, 0, 1\}$$

$(0, -2), (0, -1), (0, 0), (0, 1), (1, -2), (1, -1), (1, 0), (1, 1)$

$(2, -2), (2, -1), (2, 0), (2, 1)$

$B \times A$

$$B = \{-2, -1, 0, 1\} \times \{0, 1, 2\}$$

$$(-2, 0) (-2, 1) (-2, 2) (-1, 0) (-1, 1) (-1, 2) (0, 0) (0, 1) (0, 2)$$

$$(1, 0) (1, 1) (1, 2)$$

$B \times B$

$$B = \{-2, -1, 0, 1\} \times \{-2, -1, 0, 1\}$$

$$(-2, -2) (-2, -1) (-2, 0) (-2, 1) (-1, -2) (-1, -1) (-1, 0) (-1, 1)$$

$$(0, -2) (0, -1) (0, 0) (0, 1) (1, -2) (1, -1) (1, 0) (1, 1)$$

4 اگر سیٹ A میں 3 ارکان اور سیٹ B میں 4 ارکان ہوں تو فنکشن ذیل میں کتنے مرتبہ جوڑے ہوں گے۔

(i)  $A \times A$

$$A \times A = 3 \times 3 = 9 \text{ مرتبہ جوڑے ہوں گے۔}$$

(ii)  $A \times B$

$$A \times B = 3 \times 4 = 12 \text{ مرتبہ جوڑے ہوں گے۔}$$

(iii)  $B \times A$

$$B \times A = 4 \times 3 = 12 \text{ مرتبہ جوڑے ہوں گے۔}$$

iv) BxB

BxB

$$4 \times 4 = 16$$

16 مرتبہ جوڑا ہوں گے۔