

Victoria University of Bangladesh

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Ans. to the Q.No - 1

given here,

$$A = \{a, b, c, d\}$$

$$B = \{b, d, e, f\}$$

$$C = \{a, c, g, h\}$$

$$(i) A - B$$

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

$$= \{a, c, d\}$$

$$(ii) B - C$$

$$= \{b, d, e, f\} - \{a, c, g, h\}$$

$$= \{b, d, e, f\}$$

$$(iii) B - B$$

$$= \{b, d, e, f\} - \{b, d, e, f\}$$

$$= \{ \}$$

Ans. to the Q.N - 2

given,

For the set $A = \{a, b, c, d, e, f\}$

The power set $P(A)$ would be :

$$\begin{aligned}
 P(A) = & \{ \emptyset, \{a\}, \{b\}, \{c\}, \{d\}, \{e\}, \{f\}, \{a, b\} \\
 & \{a, c\}, \{a, d\}, \{a, e\}, \{a, f\}, \{b, c\}, \{b, d\} \\
 & \{b, e\}, \{b, f\}, \{c, d\}, \{c, e\}, \{c, f\}, \{d, e\}, \{d, f\} \\
 & \{e, f\}, \{a, b, c\}, \{a, b, d\}, \{a, b, e\}, \{a, b, f\}, \{a, c, d\} \\
 & \{a, c, e\}, \{a, c, f\}, \{a, d, e\}, \{a, d, f\}, \{a, e, f\}, \{b, c, d\} \\
 & \{b, c, e\}, \{b, c, f\}, \{b, d, e\}, \{b, d, f\}, \{b, e, f\}, \{c, d, e\} \\
 & \{c, d, f\}, \{c, e, f\}, \{d, e, f\}, \{a, b, c, d\}, \{a, b, c, e\}, \\
 & \{a, b, c, f\}, \{a, b, d, e\}, \{a, b, d, f\}, \{a, b, e, f\}, \\
 & \{a, c, d, e\}, \{a, c, d, f\}, \{a, c, e, f\}, \{a, d, e, f\} \\
 & \{b, c, d, e\}, \{b, c, d, f\}, \{b, c, e, f\}, \{b, d, e, f\}, \{c, d, e, f\} \\
 & \{a, b, c, d, e\}, \{a, b, c, d, f\}, \{a, b, c, e, f\}, \{a, b, d, e, f\} \\
 & \{a, c, d, e, f\}, \{b, c, d, e, f\}, \{a, b, c, d, e, f\} \}.
 \end{aligned}$$

Ans. to the Q. No - 3

$$62 + 60 + 58 + \dots + 40$$

First term, $a = 62$

Common distance,

$$d = 60 - 62$$

$$= -2$$

number of the terms = n

Then,

$$a + (n-1)d = 40$$

$$\Rightarrow 62 + (n-1)(-2) = 40$$

$$\Rightarrow 62 - 2n + 2 = 40$$

$$\Rightarrow 64 - 2n = 40$$

$$\Rightarrow -2n = 40 - 64$$

$$\Rightarrow -2n = -24$$

$$\Rightarrow n = \frac{-24}{-2}$$

$$\therefore n = 12$$

Hence, the required sum,

$$= \frac{n}{2} \{ 2a + (n-1)d \}$$

$$= \frac{12}{2} \{ 2 \cdot 62 + (12-1) \cdot (-2) \}$$

$$= 6 \{ 124 + 11 \cdot (-2) \}$$

$$= 6(124 - 22)$$

$$= 6 \times 102$$

$$= 612$$

So, the sum of the series $62 + 60$
 $+ 58 + \dots + 40$ is 612 .

Answer.

Ans. to the Q. No - 4

$$122 + 120 + 116 + \dots + 80$$

first term, $a =$ ~~120~~ 122

common distance $d = 120 - 122$
 $=$ ~~120~~ - 2

number of the terms = n

Then, $a + (n-1)d = 80$

$$\Rightarrow 122 + (n-1)-2 = 80$$

$$\Rightarrow 122 - 2n + 2 = 80$$

$$\Rightarrow 124 - 2n = 80$$

$$\Rightarrow -2n = 80 - 124$$

$$\Rightarrow -2n = -44$$

$$\Rightarrow n = \frac{-44}{-2}$$

$$\therefore =$$
 ~~20~~ 22

Hence, the required sum

$$= \frac{n}{2} \{ 2a + (n-1)d \}$$

$$= \frac{22}{2} \{ 2 \cdot 122 + (22-1) \cdot (-2) \}$$

$$= 11 \{ 244 + 21 \cdot (-2) \}$$

$$= 11 (244 - 42)$$

$$= 11 \times 202$$

$$= 2222 \quad \text{Answer.}$$