Exercise 6 (f)

(i) $A \cup B$

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

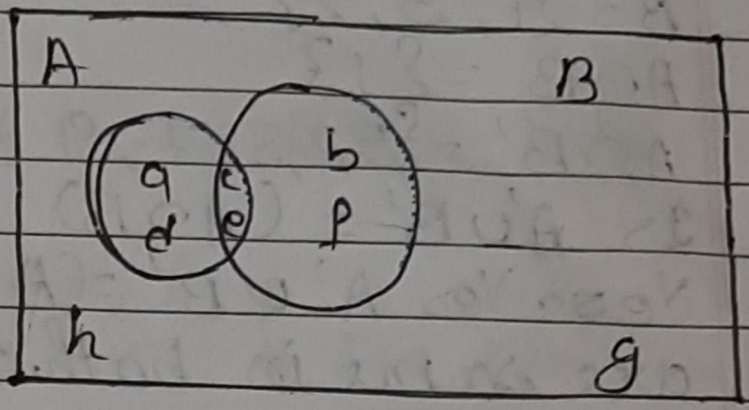
(ii) $A' \cap B$

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

$A' = \{b, f, h, g\}$

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

$A' \cap B = \{b, f\}$



(iii) $A - B =$

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

$= \{a, d\}$

(iv) $B - A$

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

$= \{b, f\}$

(v) $(A \cup B)'$

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

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

$A \cup B = \{a, d, c, e, b, f\}$

$(A \cup B)' = \{h, g\}$

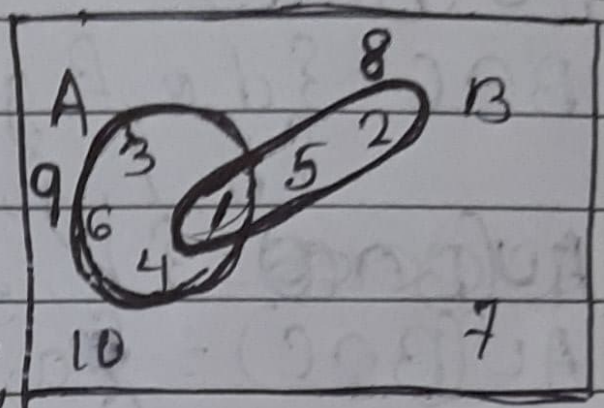
ii) $A' = \{2, 5, 7, 8, 9, 10\}$

iii) $B' = \{3, 4, 6, 7, 9, 10\}$

iii) $A' \cup B'$

$= \{2, 5, 7, 8, 9, 10\} \cup \{3, 4, 6, 7, 9, 10\}$

$= \{2, 3, 4, 5, 6, 7, 8, 9, 10\}$



iv) $(A \cap B)'$

$A = \{3, 6, 4, 1\}$

$B = \{1, 5, 2\}$

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

$A \cap B' = \{5, 2, 8, 7, 9, 10, 6, 3, 4\}$

Is $A' \cup B' = (A \cap B)'$

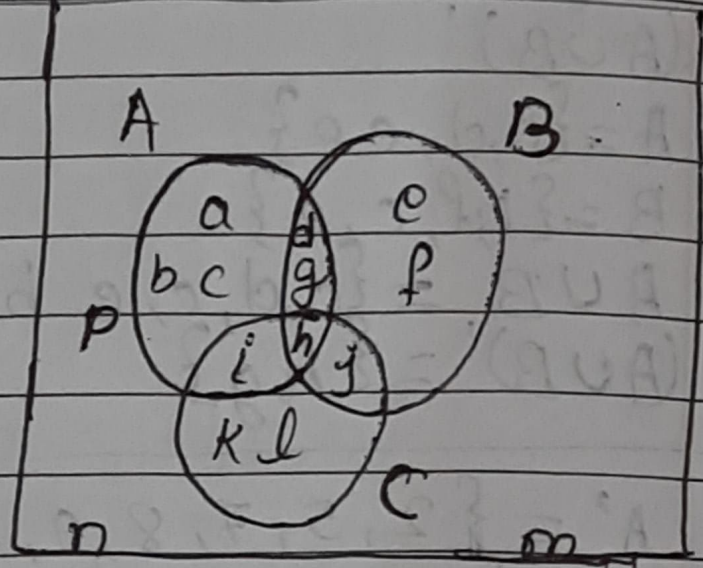
Yes Yes $A' \cup B' = (A \cup B)'$ because all the elements are same in both the sets.

3) ~~A ∪ (B ∩ C)~~

$A = \{a, b, c, d, g, h, i\}$

$B = \{d, e, f, g, h, j\}$

$C = \{h, i, j, k, l\}$



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

$B \cap C = \{d, e, f, g, h, j\} \cap \{h, i, j, k, l\}$

~~A ∪ (B ∩ C)~~ $= \{h, j\}$

$A \cup (B \cap C) = \{a, b, c, d, g, h, i\} \cup \{h, j\}$

$= \{a, b, c, d, g, h, i, j\}$

ii) $B - (A - C) = ?$

~~A - C~~ $A - C = \{a, b, c, d, g, h, i\} - \{h, i, j, k, l\}$

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

$B - (A - C) = \{d, e, f, g, h, j\} - \{a, b, c, d, g\}$

$= \{e, f, h, j\}$

iii) $A - B$

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

$= \{a, b, c, i\}$

iv) $A \cap B'$

$B' = \{a, b, c, i, k, l, p, n, m\}$

$A \cap B' = \{a, b, c, d, g, h, i\} \cap \{a, b, c, i, k, l, p, n, m\}$

$= \{a, b, c, i\}$

Is $A \cap B' = A - B$?

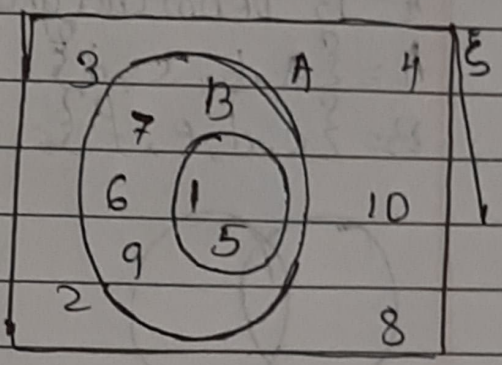
Yes $A \cap B' = A - B$ because all the elements are same in both the sets.

4) i) $B - A = \{\} / \emptyset$

$= B' = \{1, 5\}$

$- A = \{1, 5, 7, 6, 9\}$

$\therefore B - A = \{\} / \emptyset$



ii) $A = \{1, 5, 7, 6, 9\}$

iii) $B' = \{7, 6, 9, 3, 2, 4, 10, 8\}$

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

$A = \{1, 5, 7, 6, 9\}$

$B = \{1, 5\}$

$\therefore A \cap B = \{1, 5\}$

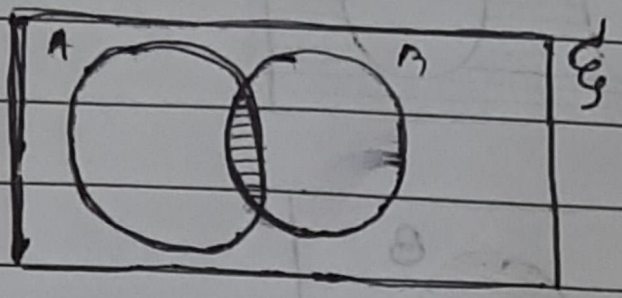
v) $A \cup B$

$A = \{1, 5, 7, 6, 9\}$

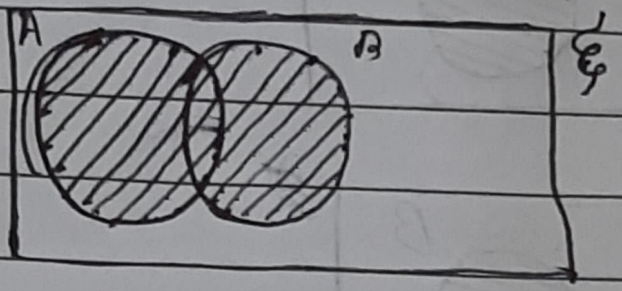
$B = \{1, 5\}$

$= A \cup B = \{1, 5, 7, 6, 9\}$

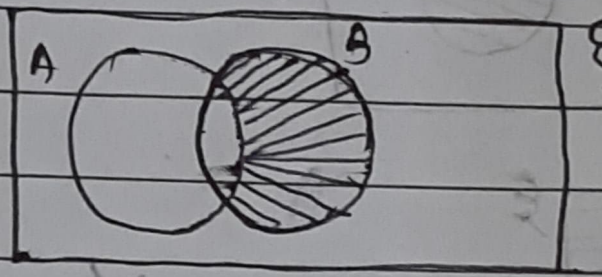
Q5 (i) $A \cap B$



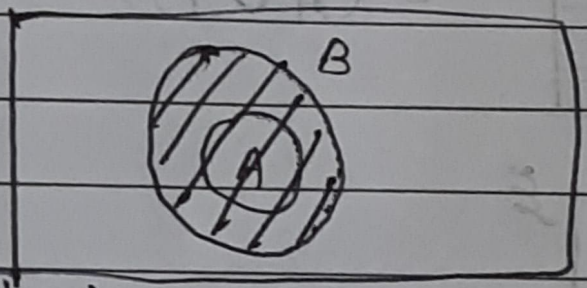
(ii) $A \cup B$



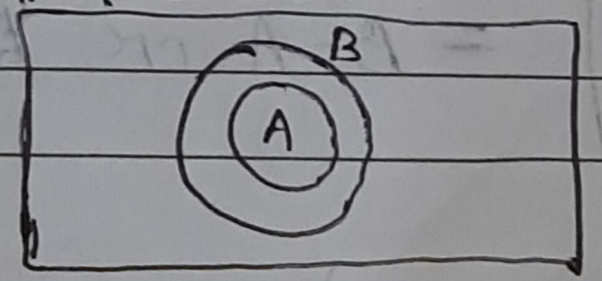
(iii) $B - A$



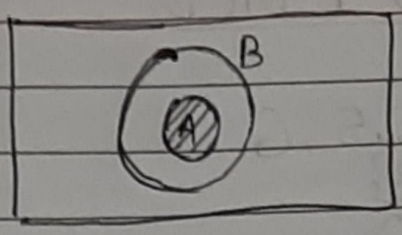
Ans: $A \cup B =$



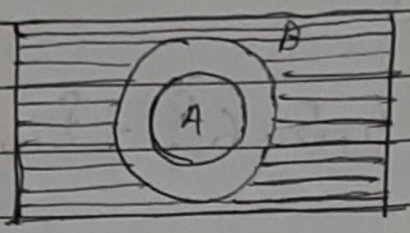
(ii) $B' \cap A$



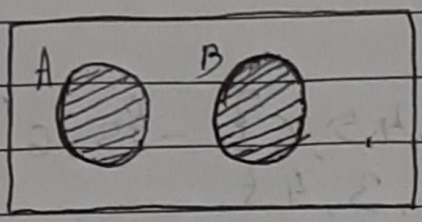
(iii) $A \cap B$



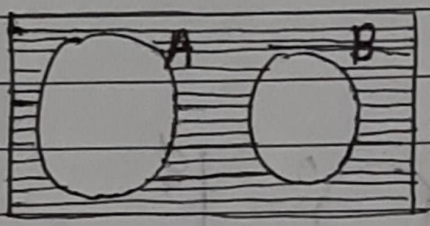
(iv) $(A \cup B)'$



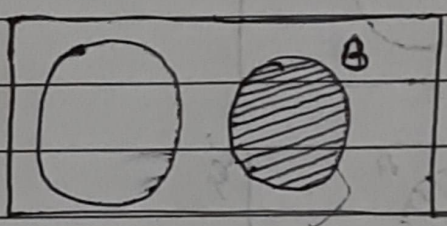
7(i) $A \cup B$



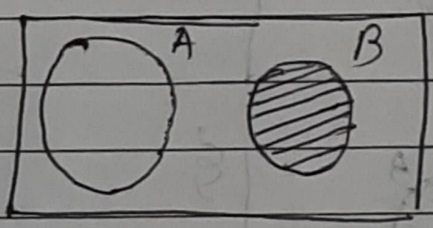
(ii) $(A \cup B)'$



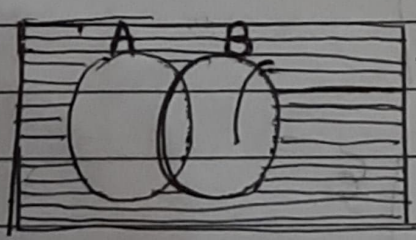
(iii) $B - A$



(iv) $B \cap A'$

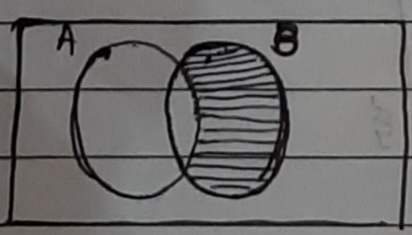


8(i)



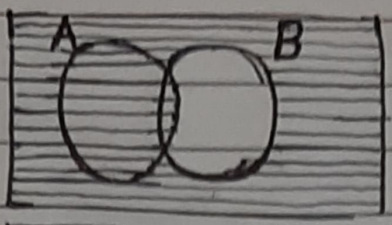
$= (A \cup B)'$

(ii)



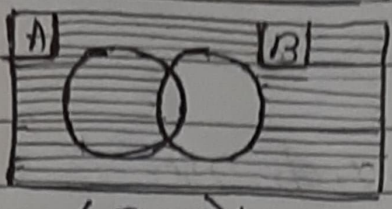
$= B - A$ or $A' \cap B$

iii)

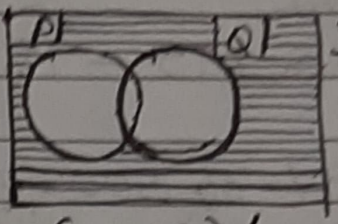


$= (B - A)'$

9 i)

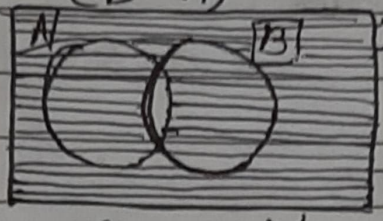


$(B - A)'$



$(P \cup Q)'$

ii)



$(A \cap B)'$

10 i) $A = \{a, b, c, d\}$

$B = \{c, d, e, g\}$

$C = \{b, c, e, f\}$

* $(A \cup B) - C = \{a, b, c, d, e, g\} - \{b, c, e, f\}$

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

ii) $B - (A \cap C)$

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

$B = \{c, d, e, g\}$

$C = \{b, c, e, f\}$

$B - (A \cap C) = \{c, d, e, g\} - \{b, c\}$

$= \{d, e, g\}$

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

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

$B = \{c, d, e, g\}$

$C = \{b, c, e, f\}$

$(B \cap C) \cup A = \{c, e\} \cup \{a, b, c, d\}$

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

Q. Verify: $A-(B\cap C)=(A-B)\cup(A-C)$

$A=\{a,b,c,d\}$
$B=\{b,c,d,e,g\}$
$C=\{b,c,e,f\}$

LHS	RHS
$A-(B\cap C)$	$(A-B)\cup(A-C)$
$=\{a,b,c,d\}-\{c,e\}$	~~$=\{a,b,e,d\}$~~
$=\{a,b,d\}$	$=\{a,b\}\cup\{a,d\}$
	$=\{a,b,d\}$

$\therefore$ LHS = RHS (verified)

ii) $A=\{a,b,d,e\}$
$B=\{b,c,e,f\}$

i) $\{a,d\}=A-B$

iii) $\{a,d,c,f\}=$
~~$A\Delta B$~~ $A-B=\{a,d\}$
$B-A=\{c,f\}$
$(A-B)\cup(B-A)=\{a,d,c,f\}$

iii) $\{a,d,c,f,g,h\}$
$=$ ~~$A\cap B=b,e$~~
$A=\{a,b,d,e\}$
$B=\{b,c,e,f\}$
$A\cap B=\{b,e\}$
$(A\cap B)'=\{a,d,c,f,g,h\}$

iv) $\{a,d,g,h\}=B'$

v) $\{g,h\}=$ ~~$(A\cup B)$~~
$(A\cup B)=\{a,b,c,d,e,f\}$
$\therefore (A\cup B)'=\{g,h\}$