

Problem Sheet 5 Set Theory

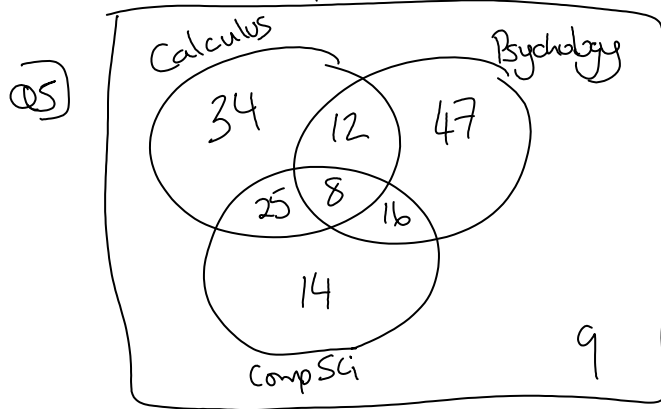
$$\text{Q1)} \quad \begin{array}{l|l} \text{(i)} \begin{array}{l} \{b, c\} \\ \{b, c, e\} \\ \{b, c\} \end{array} & \text{(ii)} \begin{array}{l} \{a, b, c\} \\ \{a\} \end{array} \end{array}$$

$$\text{Q2)} \quad \begin{array}{l} \{a, b, c, d, f, g\} \\ \{b, c\} \\ \{d, f, g\} \\ \{a\} \end{array}$$

$$\begin{aligned} \text{Q3)} - & \{(x, a), (x, b), (y, a), (y, b), \\ & (z, a), (z, b), (w, a), (w, b)\} \\ - & \{(a, x), (a, y), (a, z), (a, w), \\ & (b, x), (b, y), (b, z), (b, w)\} \\ - & \{(x, x), (x, y), (x, z), (x, w), \\ & (y, x), (y, y), (y, z), (y, w), \\ & (z, x), (z, y), (z, z), (z, w), \\ & (w, x), (w, y), (w, z), (w, w)\} \\ - & \{(a, a), (a, b), (b, a), (b, b)\} \end{aligned}$$

$$\begin{aligned} \text{Q4)} - & \{\emptyset, \{2\}\} \\ - & \{\emptyset, \{1\}, \{2\}, \{1, 2\}\} \\ - & \{\emptyset, \{1\}, \{2\}, \{3\}, \{1, 1\}, \{1, 2\}, \\ & \{1, 3\}, \{1, 2, 3\}\} \\ - & \{\emptyset, \{1, 2\}, \{1, 3\}, \{2, 2\}, \{2, 3\}, \\ & \{1, 2\}, \{1, 3\}\}, \{1, 2\}, \{2, 2\}\}, \{1, 2\}, \{2, 3\}\} \\ & \{1, 3\}, \{2, 2\}\}, \{1, 3\}, \{2, 3\}\}, \{2, 2\}, \{2, 3\}\} \\ & \{1, 2\}, \{1, 3\}, \{2, 2\}\}, \{1, 2\}, \{1, 3\}, \{2, 3\}\} \\ & \{1, 3\}, \{2, 2\}, \{2, 3\}\}, \{1, 2\}, \{2, 2\}, \{2, 3\}\} \end{aligned}$$

$\{\{1,2\}, \{1,3\}, \{2,2\}, \{2,3\}\}$



$\Rightarrow 9$  are taking none

Q6)

$\{1, 2, 3, 4, 5, 7, 10\}$   
 $\{2, 3, 5\}$   
 $\{2, 3, 5, 6, 8, 9\}$   
 $\cup$   
 $\{6, 8\}$   
 $\{1, 2, 3, 4, 5, 7, 10\}$