

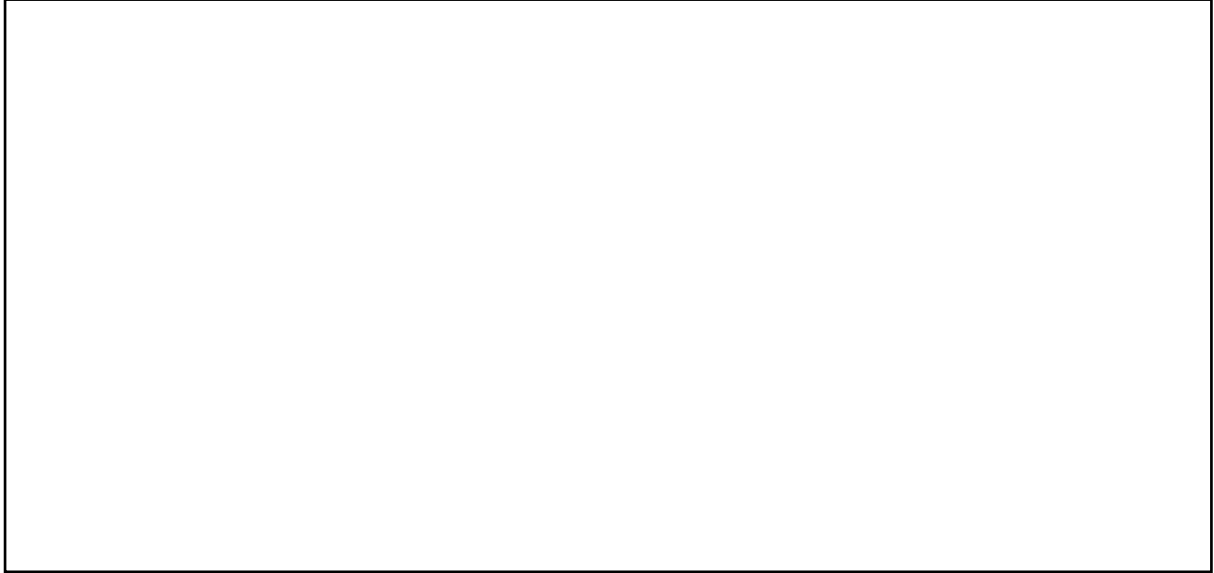
Question 1 – Normalise the following relations into BCNF

a)

R [A, B, C, D, E]

FD 1: $A \rightarrow C$

FD 2: $\{A, B\} \rightarrow \{D, E\}$

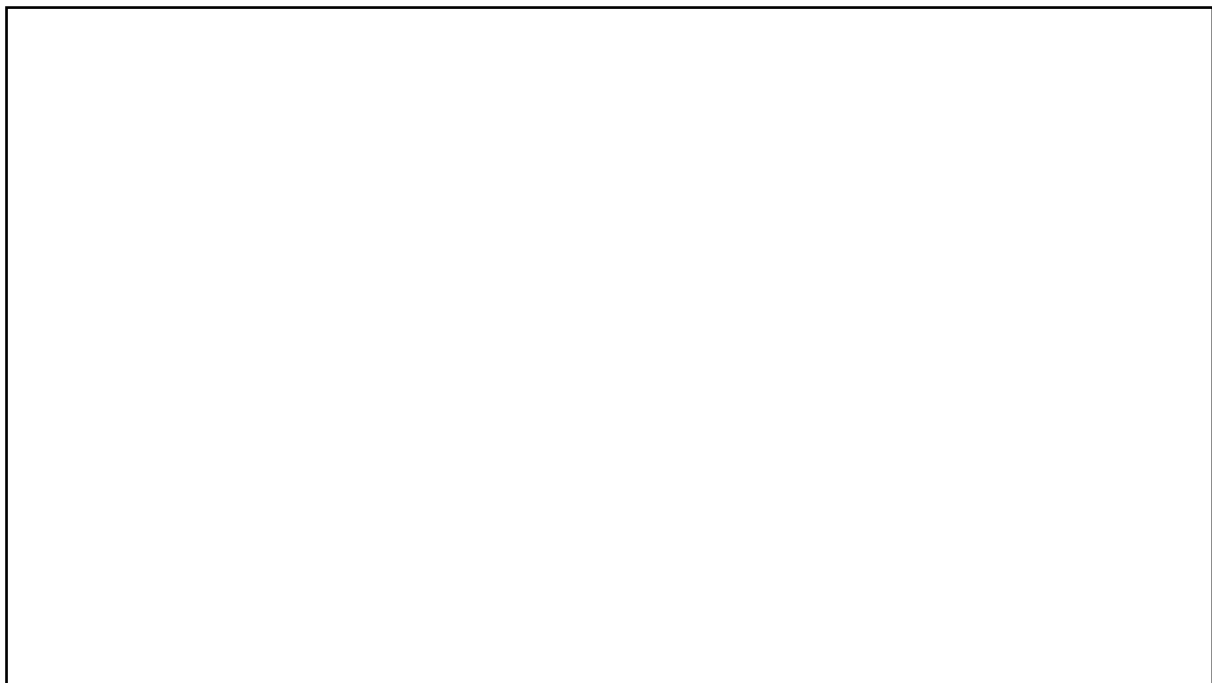
A large empty rectangular box with a black border, intended for the student's answer to part a).

b)

R [A, B, C, D, E]

FD 1: $A \rightarrow B$

FD 2: $C \rightarrow \{D, E\}$

A large empty rectangular box with a black border, intended for the student's answer to part b).

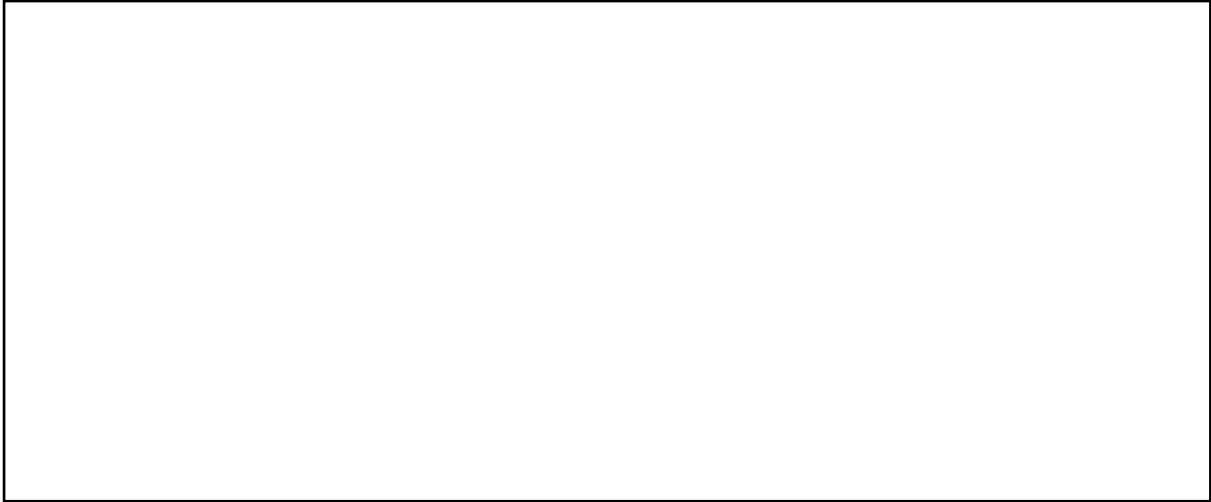
c)

R [A, B, C, D, E, F]

FD 1: $A \rightarrow \{B, C\}$

FD 2: $C \rightarrow \{D, E\}$

FD 3: $E \rightarrow F$



d)

R [A, B, C, D, E]

FD 1: $A \rightarrow B$

FD 2: $C \rightarrow \{D, E\}$

FD 3: $\{A, D, E\} \rightarrow C$

FD 4: $\{B, C\} \rightarrow A$



Question 2 – Derive Minimal Cover for the following FD sets

a)

1. $A \rightarrow \{D, E\}$

2. $D \rightarrow A$

3. $B \rightarrow C$

4. $\{B, C\} \rightarrow \{A, D\}$

5. $\{E, A\} \rightarrow D$

b)

1. $A \rightarrow \{B, C, D, E, F\}$

2. $\{B, C\} \rightarrow A$

3. $\{D, E\} \rightarrow B$

4. $C \rightarrow D$

Question 3 – Decompose the following relations into 3NF

a)

R [A, B, C, D, E, F]

FD 1: {A, B} \rightarrow C

FD 2: C \rightarrow {D, E}

b)

R [A, B, C, D, E, F, G, H]

FD 1: $\{A, B\} \rightarrow C$

FD 2: $\{C, D\} \rightarrow E$

FD 3: $D \rightarrow \{F, G\}$

A large empty rectangular box with a thin black border, occupying the lower half of the page. It is likely intended for a student to draw a diagram or provide an answer related to the functional dependencies listed above.