

Question 1 – Normalise the following relations into BCNF

a)

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

FD 1: $A \rightarrow C$

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

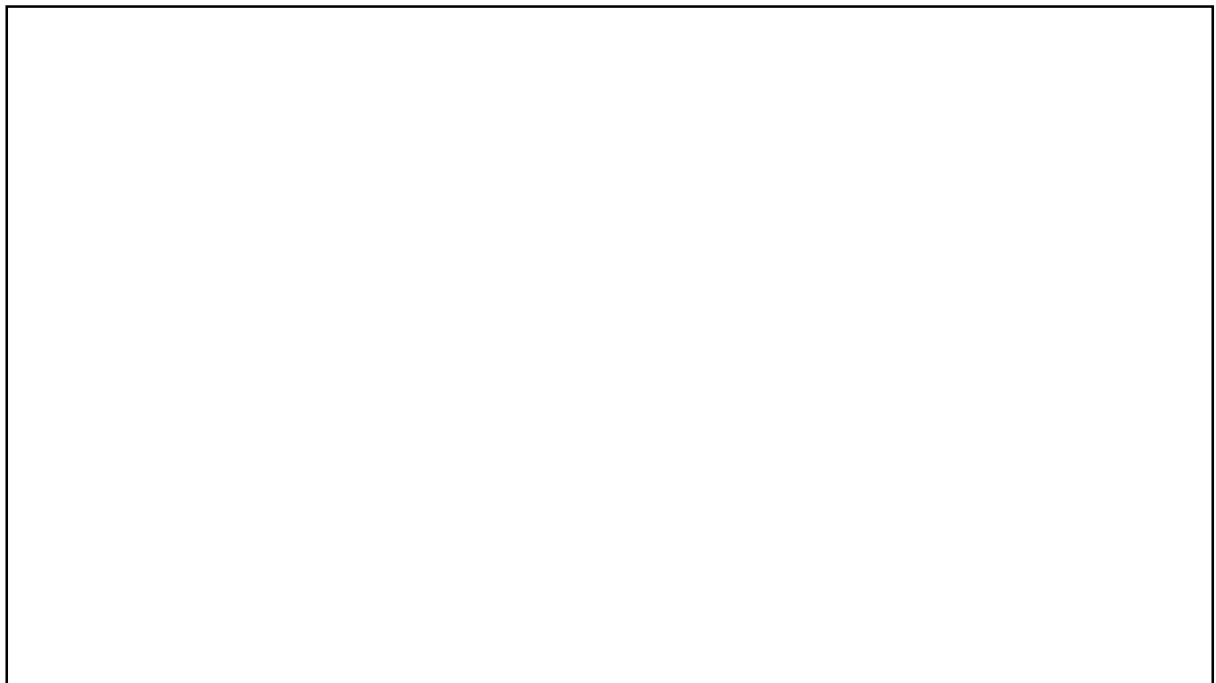


b)

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

FD 1: $A \rightarrow B$

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



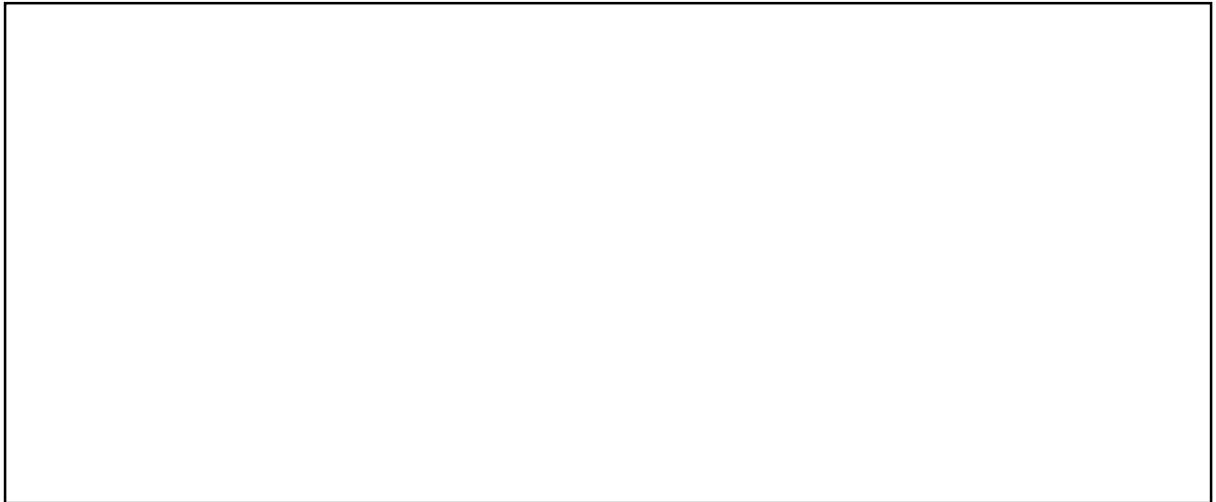
c)

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)

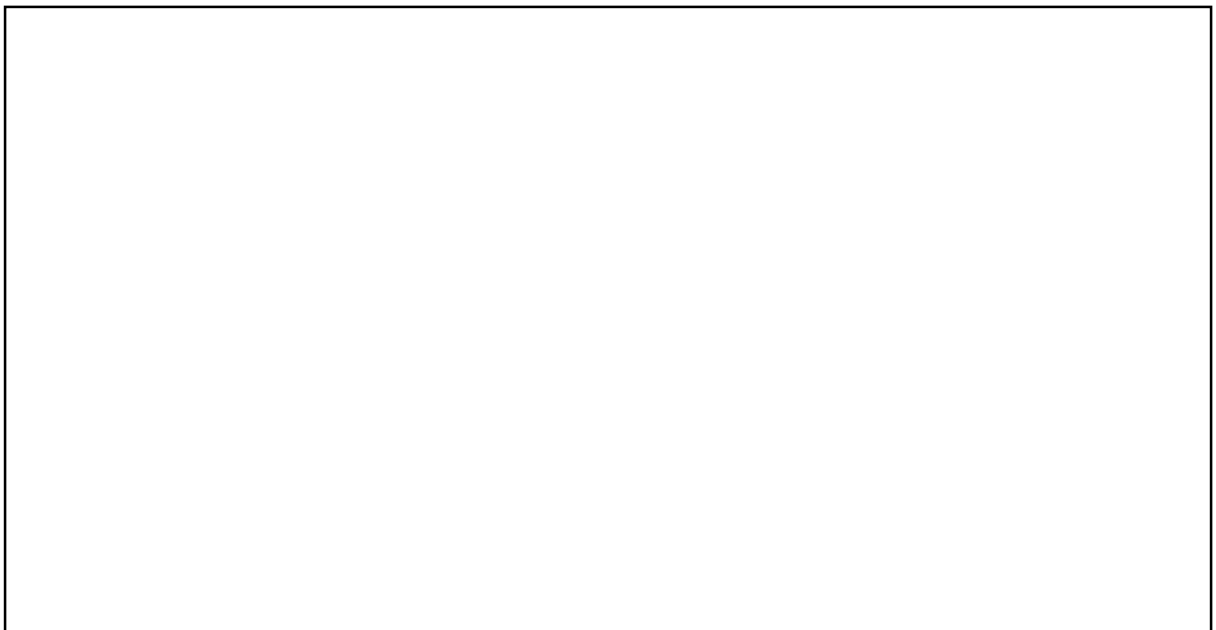
R [A, B, C, D, E]

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}

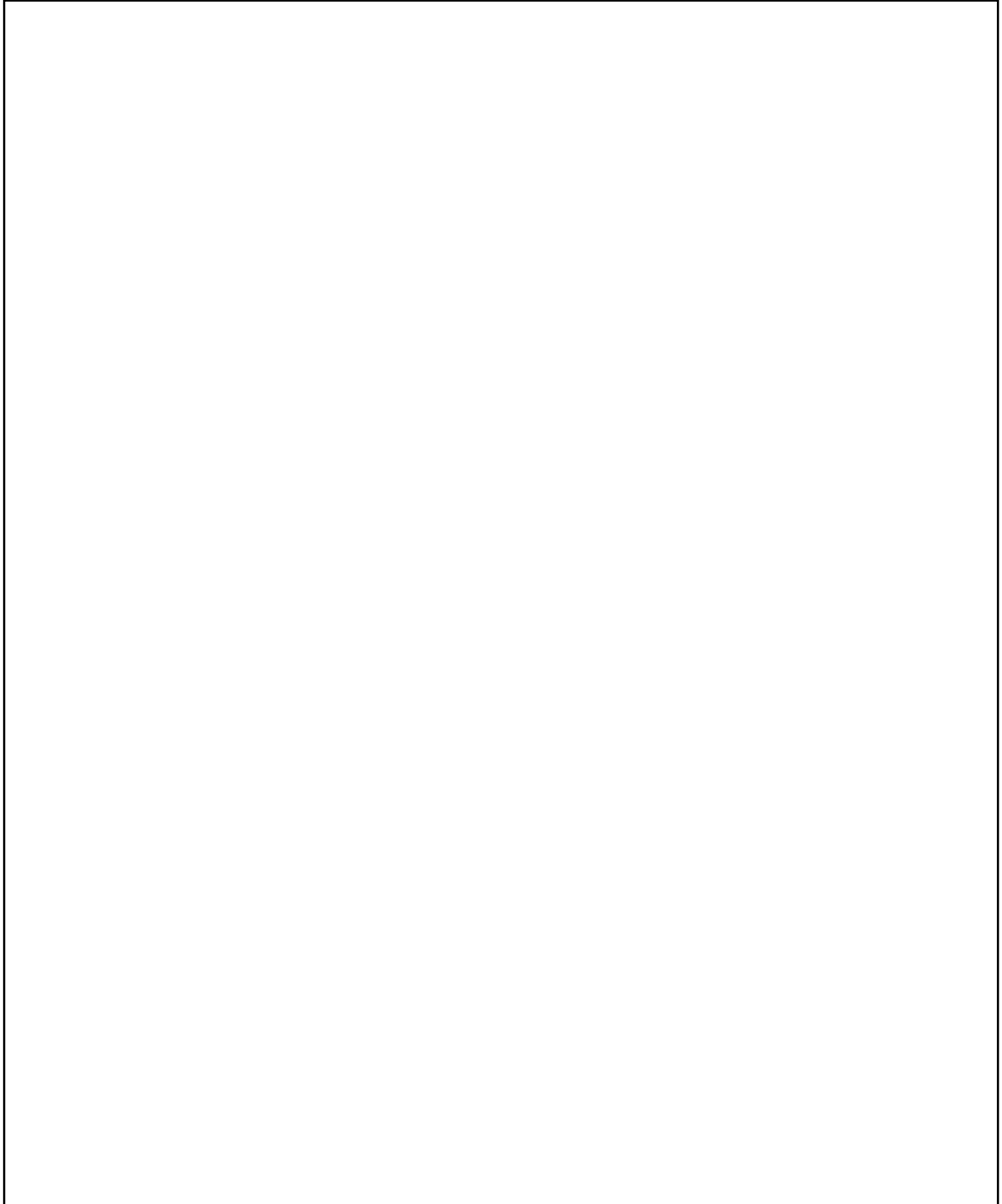
b)

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 intended for a student to draw a diagram or write a solution related to the functional dependencies listed above.