草稿纸

姓名: 科目: 第 页

a) $AC \to BD \Rightarrow \begin{cases} AC \to B \\ B \to E \end{cases} \Rightarrow AC \to E$.

b). $(A)^+ = \{A\}$, $(AC)^+ = \{A, C, B, D, E\}$.

c). $F \Rightarrow \{AC \to BD, B \to CE, C \to D\}$

$\Rightarrow \{AC \to B, B \to CE, C \to D\}$

$\therefore F_c = \{AC \to B, B \to CE, C \to D\}$

d) $X = \{A\}$ $Y = \{B, C\}$.

$X^+ \neq U$. $(AB)^+ = \{A, B, C, D, E\} = U$

$(AC)^+ = \{A, B, C, D, E\} = U$

$\therefore$ AB, AC are candidate keys.

because of FD $B \to E$, R is only in 1st normal form

e) decompose into (ABC, BCE, CD)

f)

	A	B	C	D	E
R_1	A	B	C	X_{14}	X_{15}
R_2	X_{21}	B	C	X_{24}	E
R_3	X_{31}	X_{32}	C	D	X_{35}

$\Rightarrow$

	A	B	C	D	E
R_1	A	B	C	D	E
R_2	X_{21}	B	C	D	E
R_3	X_{31}	X_{32}	C	D	X_{35}

$\Leftarrow$ so it is lossless-join.

Since it's on 3rd NF it's also dependency persevering