3. a. (A, B)

b. No, not in BCNF.
Violating relation: $D \rightarrow C$

c. R: (DC) R: (AB D)
FD: $D \rightarrow C$ $AB \rightarrow D$

d. No, $D \rightarrow C$ does not satisfy the requirements.

$\begin{pmatrix} DC \\ ABC \end{pmatrix}$ same as BCNF

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4. (1) A has to be part of any candidate key.
Trying out AB, AD and AE we see that all of them are candidate keys.
AC is not a candidate key so that's all.

(2) $E \rightarrow B$ violates BCNF

(3) (i) Split on $E \rightarrow B$ to get {BE, ACDE}
(ii) Split {BE, ACDE} accordig to $D \rightarrow E$ gives
{BE, DE, ACD}
(iii) Split {BE, DE, ACD} using $A \rightarrow C$ gives us 4 relations
{BC, DE, AC, D}

(4) No, not in BCNF

(5) Already a canonical cover

BCD
DE
AC
EB
AB

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5. R(A, B, C, D, E) $A \rightarrow B$
$BC \rightarrow D$

decomposes into

R(AB) and R(B C D)
$A \rightarrow B$ $BC \rightarrow D$.