Relational database design

Question 1:

Given a relation schema R(A, B, C, D, E, G, H),

with F={A→BC, B→C, C→DG, D→CG, H→DEG, E→DH}

1- Give a minimal cover of F
2- Determine **all** keys of R
3- Give a 3NF decomposition of R
4- Is your decomposition BCNF? If not give a BCNF decomposition.

Question 2:

Given the following relation schemas and the sets of FD's:

a- R(A,B,C,D) F={AB→C,C→D, D→A, BC→C}
b- R(A,B,C,D) F={B→C, B→D, AD→B}
c- R(A,B,C,D) F={AB→C, DC→D, CD→A, AD→B}
d- R(A,B,C,D) F={AB→C, C→D, D→B, D→E}
e- R(A, B, C, D, E) F = {AB→C, DB→E, AE→B, CD→A, EC→D}

In each case,

(i) Give all candidate keys
(ii) Indicate the BCNF violation
(iii) Give the minimal cover and decompose R into a collection of relations that are BCNF. Is it lossless? Does it preserve the dependencies?
(iv) Indicate the 3NF, and decompose R into a 3 NF decomposition