Question 1

Suppose you are given a relation R = (A , B , C , D , E) with the following functionaldependencies:

{CE →D,D→B,C→A}

.a. Find all candidate keys.

b. Identify the best normal form that R satisfies (1NF, 2NF, 3NF, or BCNF).

c. If the relation is not in BCNF, decompose it until it becomes BCNF. At each step, identify anew relation, decompose and re-compute the keys and the normal forms they satisfy.

Question 2

Suppose you are given a relation R=(A,B,C,D,E) with the following functional dependencies:BD→E,A→C

.Sthat the decomposition into R1=(A,B,C) and R2=(D,E) is lossy.

Question3

Giventhe belowsetoffunctionaldependencies forarelationR(A,B,C,D,E,F,G),

F ={AD→B F , C D →E G C , B D →F,E→D,F→C,D→F}

. Find the minimal cover for the above set of functional dependencies

Question 1

Suppose you are given a relation R=(A,B,C,D,E) with the following functional dependencies:{BC→A D E , D →B}

.a. Find all candidate keys.

b. Identify the best normal form that R satisfies (1NF, 2NF, 3NF, or BCNF).

c. If the relation is not in BCNF, decompose it until it becomes BCNF. At each step, identify anew relation, decompose and re-compute the keys and the normal forms they satisfy

Question 2

You are given the table below for a relation R(A,B,C,D,E). You do not know the functional dependencies for this relation.

A	B	C	D	E
a	122	1	S1	a
e	236	4	E2	b
a	199	1	B5	c
b	213	2	Z8	d

Suppose this relation is decomposed into the following two tables: R1(A,B,C,D) and R2(A,C,E).Is this decomposition lossless? Explain your reasoning

Question 3

Consider a relation named EMP DEPT with attributes: ENAME, SSN, BDATE,ADDRESS, DNUMBER, DNAME, and DMGRSSN. Consider also the set G of functional dependencies for EMP DEPT

G={SSN →E N A M E , B D A T E , A D D R E S S , D N U M B E R , D N U M B E R →D N A M E , D M G R S }

.a) Calculate the closures SSN+ and DNAME+ with respect to G.b) Is the set of functional dependences G minimal? If not, find a minimal set of functional dependencies that is equivalent to G.c) List an update anomaly that can occur for relation EMP DEPT.d) List an insertion anomaly that can occur for relation EMP DEPT.e) List a deletion anomaly that can occur for relation EMP DEPT