A>(B,C)
C>(D,E)

Key: A+= ABCDE (A)

FD C > D and C > E violates BCNF

Sequirement

Benf: NO

3NF: Same Sct of FD's Violate NO

2NF : YES

ZNF

 ${A,B} \rightarrow C$ $C \rightarrow B$ $A \rightarrow D$ Rey: ABE, ACE

ABT = ABCD => ABE

ACT = ABCD => AEE

BCNF: ? NO. AU FD'S Violate

3NF: ? NO. 3

2NF: Non Poissone attributes D

seducitely dependent on Keyf.

NO

INF

$$AB \rightarrow C$$

$$B \rightarrow D$$

$$D \rightarrow A$$

ABT = ABCD

B+- BDAC

BCNF: NO. FD D > A Violates the YP.

3NF: NO. D-)A violate

2NF: Des.

Non Prime attrib G.D. A

Air redundant in

AB-C = B-C

 $A \rightarrow B$ $A \rightarrow C$

 $B \rightarrow D$

 $D \rightarrow E$

Key: A A+ = ABCDE

BCNF: NO. B > D and D > E violates

3NF: NO. 7

 $A \rightarrow B$ $B \rightarrow \{C, E, F\}$

Key: (AD) A+= ABCEF =) AD

BCNF: NO. B-) {C, E, F} Violates

3 NF: NO.

2NF: NO. as not all non-prime althibity are irreducibly depend on Key.

$$AB \rightarrow CD$$

$$B \rightarrow C$$

$$C \rightarrow D$$

BCNF: NO. BOC, COD

3NF: NO.

2NF: NO. Non price & C,D one reducibly depend on Key.

 $A \rightarrow BC$

 $B \rightarrow C$

 $A \rightarrow B$

 $AB \rightarrow C$

Key: AD A+ = ABC

BENF: NO. A >B, B>C Violates the ref.

3 NF: NO.

ADB ADC (To) BDC ABDC

 $A \rightarrow B$ $AB \rightarrow CD$ $C \rightarrow D$ $A \rightarrow B$ $A \rightarrow B$ A

Benf: NO. C -> D culpinh F1 3NF: NO. 2NF: YES

 $ABC \rightarrow D$

 $A \rightarrow B$

ABC-)D

BONF: NO. A-)B Culport

Non prime attribe B reducibly depend on key.

10. Consider relation Book(AccessonNo, ISBN, Title, Author, Publisher, Price), and following FDs
AccessonNo →{ISBN}
ISBN →{Title, Publisher, Price}

Key: AclissonNO, Author

BONF: NO. All FD violates the Yel.

3NF: NO. 7)

2NF: NO.

11. Consider relation Book(ISBN, Title, Author, Publisher, Price)
ISBN →{Title, Publisher, Price}

Rey: [ISBN, Anthor]

BCNF: NO.

3NF: NO.

2NF: NO.

Name, Type, NoOfBooksCanBelssued, IssueDuration), and
Key: Mem9d BeNF: NO. FD 3 and 4 are Culpr 3NF: NO.
2NF: YES
Hame, GenericName, BatchNo, Stock, MRP, TaxRate, Key: BatchNo Benf: No. 1,2,6 violate the rq. 3NF: NO m 2NF: YES

14. Consider relation R (StudID, SName, CPI_UptoDate, CPI_UptoASem, SPI, AcadYr, Sem,

ProgCode, CourseNo, Grade). Holds following FDs

StudID → {CPI_UptoDate, ProgCode, SName} {StudID, AcadYr, Sem} → {SPI, CPI_UptoASem} {StudID, AcadYr, Sem, CourseNo} → Grade Key: {5 1D, ACDYY, Sem, Course NO}

BENF: NO.

3NF: NO.

 Relation IssueLog(IssueDate, MemberID, AccessonNo, DueDate, ReturnDate), and Following functional dependencies-

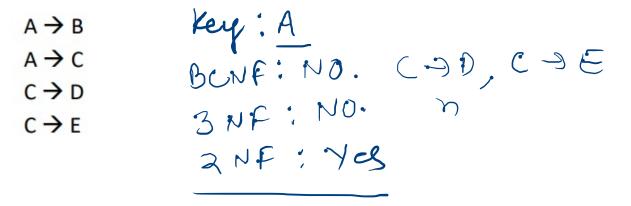
{MemberID, AccessonNo, IssueDate} → {DueDate, ReturnDate}

Key: Mend, Adesson 10, Sesne Date } BENF: Yes.

{A,B}→C Key: AB
C→B Benf: NO. C→B cultont
3NF: Yes &n C→B, B is poinne attnibute.

17. Consider relation R(A, B, C, D, E, F), and following FDs-

A→{B, D, E} Key: FC FC+= FCABDE F→{A}
BCNF: NO. 3NF: NO. 2NF: NO.



19. Consider relation R(A, B, C, D, E, F), and following FDs-(Same as previous one except that R has got an additional attribute F)

Consider relation R(S#, SName, P#, QTY), SName is unique. Holds following FDs

- $1 \{S\#,P\#\} \rightarrow QTY$
- $\supset \{SNAME, P\#\} \rightarrow QTY$
- $3 \text{ S# } \rightarrow \text{SNAME}$
- _ SNAME → S#

- Key: {5#, P#}, {SNAME, P#}

BCNF: NO. FD 3 & 3) violate the 89 3NF; YES. In both FD's RHS is Prime Altrib

21. Consider relation R(S#, SName, P#, QTY), SName is unique. Holds following FDs

 $\{S\#,P\#\} \rightarrow QTY$ S# → SNAME

Ky; ¿S#, P#}
BENF: NO. 3NF: NO. 2NF: NO.

22. Relation UserDetails(UserID, PWD, Fname, Mname, Lname, Mobile, CityID, CategoryID)

UserID → {PWD, Fname, Mname, Lname, Mobile, CityID, CategoryID} Mobile → {UserID, PWD, Fname, Mname, Lname, CityID, CategoryID}

Key; {UserId}, {Mobile}
Beaf: Yes.