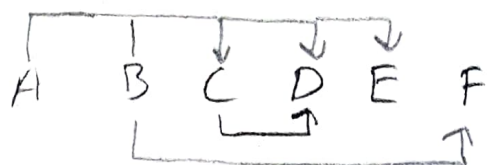


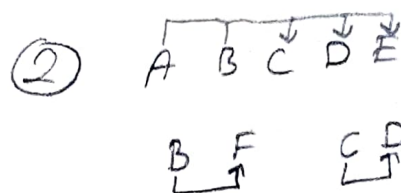
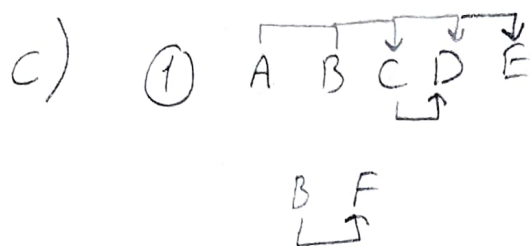
~~Garip~~

3)



a) A, B are the keys.

b) 1NF → Multivalued attributes should be removed.  
 2NF → Partial dependencies should be removed.  
 3NF → Transitive dependencies should be removed.



4) There is a relation between DEPARTMENT and SCHEDULE. In addition, SCHEDULE and EMPLOYEE has a similar relation. So, we can apply denormalization.

5) a) We can define indexes on GPA, StudentName, StudentID and CourseID.

b) CREATE NONCLUSTERED INDEX index\_GPA on STUDENT(GPA)

CREATE NONCLUSTERED INDEX index\_StudentName on STUDENT(StudentName)

CREATE CLUSTERED INDEX index\_StudentID on STUDENT(StudentID)

CREATE CLUSTERED INDEX index\_CourseID on REGISTRATION(StudentID, CourseID)



6)

a)

- i) 150, 160, 110, 120, 170, 130, 140
- ii) 110, 120, 130, 140
- iii) 150, 170, 130

b)

- i) 100, 110, 120, 130
- ii) 350, 360, 220, 230
- iii) 350, 360, 230, 120