1. (a) What is database management system?Why do we need a DBMS .
   (b) Discuss the advantages and disadvantages of a fie-oriented system.
2. Discuss the basic features of the relational data model. Describe their advantages,disadvantages and importance to the end-user and the designer.
3. Discuss the role of the following personnel in the database environment:
   (a) Data administrator
   (b) Database administrator.
4. What do you mean relational algebra? Define all the operators of the relational algebra
5. What is transaction ? Draw a State diagram and discuss the typical states that a transaction goes through during execution.
6. What do you understand by the term normalization? Describe the purpose of normalizing data.
7. What do you mean by generalization and specialization? Explain with example.
8. Write short notes on the following:
   (a) SQL (b) Database Recovery