

- NB. 1. Question number one is compulsory**
2. Attempt any three out of remaining five questions
3. Assume suitable data
4. Figures to the right indicate the maximum marks

- Q.1 Attempt any FOUR:** (20)
- a) Differentiate between Database Management System and File System. (05)
 - b) Explain aggregate functions with syntax and suitable example. (05)
 - c) Explain type of functional dependency with suitable example. (05)
 - d) Describe types of Entities with example. (05)
 - e) Explain Log based recovery. (05)
- Q.2 a) Explain overall architecture of DBMS in detail with appropriate diagram. (10)**
Explain Relational Algebra-operators given below:
- b) 1. Select (10)
 - 2. Project
 - 3. Union
 - 4. Rename
- Q.3 a) Draw EER Diagram for Hospital Management system and Map it to Relational Model (10)**
b) Discuss types of Joins in sql with syntax and example. (10)
- Q.4 a) Write SQL queries for given database. (10)**
employee (eno, ename, bdate, title, salary, dno)
project (pno, pname, budget, dno)
department (dno, dname, mgreno)
works (eno, pno, resp, hours)
- 1) Find the project number and name for projects with a budget greater than 100,000.
 - 2) Find the employees (name only) in department 'D1' ordered by descending salary.
 - 3) Find all works records where hours worked is less than 10 and the responsibility is 'Manager'.
 - 4) Find name of employees that are ending with letter 's'.
 - 5) Find total number of employee.
 - 6) Write the query to increase salary of the employees by 10%.
 - 7) Find Employee name with maximum salary.
- b) Explain all types of integrity constraints with an example? (10)
- Q.5 a) Define Normalization. Explain 1NF, 2NF, 3NF and BCNF with examples. (10)**
b) Write note on (10)
- i) Log based protocol
 - ii) Timestamp-based protocols
- Q.6 a) What is deadlock? Give deadlock prevention and detection with suitable example (10)**
b) Explain concept of Serializability along with Conflict Serializability and View Serializability (10)
