

- N.B.
- 1) All questions are compulsory.
 - 2) Figures to the right indicate marks.
 - 3) Illustrations, in-depth answers and diagrams will be appreciated.
 - 4) Mixing of sub-questions is not allowed.

Q. 1 Attempt the following (Any THREE)(Each of 5Marks) (15M)

- (a) Differentiate between file processing system and DBMS.
- (b) List and Explain different types of attributes in ER Model.
- (c) Explain database system architecture with the help of diagram.
- (d) What are the different types of data models? Explain any one of them.
- (e) What do you mean by Weak Entity Sets?
- (f) What is UML? What are its benefits?

Q. 2 Attempt the following (Any THREE)(Each of 5Marks) (15M)

- (a) Explain with proper example-
 - i) Primary Key
 - ii) Super Key
- (b) What are the features of good relational database design?
- (c) What is normalization? Explain Second Normal Form.
- (d) Explain Projection operation of relational algebra with suitable example.
- (e) State the difference between Relational Algebra and Relational Calculus.
- (f) Write a short note on Domain Relational Calculus.

Q. 3 Attempt the following (Any THREE) (Each of 5Marks) (15M)

- (a) What are constraints? Explain Check constraint and Primary Key constraint.
- (b) What are the advantages of SQL?
- (c) What are views? How to create a view?
- (d) What are Joins? List out different types of Joins. Explain any one of them.
- (e) Explain the following with example-
 - i) UNION
 - ii) INTERSECT
 - iii) MINUS

- (f) Consider following tables:

Book (ISBN, title, author,publisher)

Orders(orderno, orderdate, qty,amt, ISBN)

Solve following queries:

- i) Display the authors whose name starts with 'A' and 'S' as third letter.
- ii) Find the number of copies ordered for each book.

iii) Create a view showing maximum of ordered amount and minimum of ordered amount.

Q. 4 Attempt the following (Any THREE) (Each of 5Marks)

(15M)

- (a) List and Explain different states through which transaction goes during its execution.
- (b) Define-
 - i) Serial Schedule
 - ii) Serializable Schedule
 - iii) Conflict Equivalent Schedule.
- (c) How deadlock is prevented?
- (d) Explain timestamp ordering protocol.
- (e) Write a short note on View Serializability.
- (f) What are the advantages of concurrent execution?

Q. 5 Attempt the following (Any THREE) (Each of 5Marks)

(15M)

- (a) List and Explain various features of PL/SQL.
- (b) What do you mean by Sequence? Explain the syntax of sequence creation.
- (c) What are packages? What are the components of package? Explain its syntax.
- (d) What are Triggers? Explain its types. Give example of any one type of trigger.
- (e) Explain parameterised cursor along with its syntax and example.
- (f) Consider a table Student(rollno, sname, city). Create a function to return the name of student for a given rollno.