

Date: 07.10.2019

Time : (2¹/₂ Hours)

Total Marks: 75

- N.B. (1) All questions are compulsory.
(2) Figures to the right indicate marks for respective sub questions.

Q.1) Attempt **any THREE** of the following. (15)

- (i) Compare between File System and Database System?
- (ii) List and explain different levels of abstraction.
- (iii) Write importance of data model.
- (iv) What are the basic building blocks of data model? Explain with example.
- (v) What is mapping cardinality? Explain with suitable example.
- (vi) List and explain different types of attributes in ER model.

Q2) Attempt **any THREE** of the following. (15)

- (i) Explain joins with its types in relational algebra.
- (ii) State the difference between relational algebra and calculus.
- (iii) How to create and modify relations of RDBMS.
- (iv) Explain the aggregate operation of relational algebra.
- (v) What is normalization? Explain 1NF and 2NF with example.
- (vi) Explain the different types of keys used in relational Algebra.

Q.3) Attempt **any THREE** of the following. (15)

- (i) Consider the schema where the primary keys are underlined.
person (driver id, name, address) car (license, model, year)
accident (report number, date, location)
owns (driver id, license)
participated (report number, license, driver id, damage amount)
Construct the following SQL queries for this relational database.
 - a. Find the total number of people who owned cars that were involved in accidents in 2009.
 - b. Add a new record to the database for person table. assume any values for required attributes.
 - c. Delete the records belonging to "John Smith".
 - d. Delete records of table person.
 - e. delete the table participate.
- (ii) What is SQL? What are the characteristics of SQL?
- (iii) What is constraint? explain types of constraints.
- (iv) How views are differ from table?
- (v) Explain all operators used in SQL.
- (vi) How views are created in SQL? explain with example.

Q.4) Attempt **any THREE** of the following. (15)

- (i) Discuss ACID properties of transaction.
- (ii) Draw state diagram of transaction. Explain in short.
- (iii) Explain the timestamp-ordering protocol.
- (iv) What is deadlock in Transaction? How deadlock is prevented?
- (v) What is System Log.
- (vi) Explain the problems in concurrency control.

- Q.5) Attempt **any THREE** of the following. (15)
- (i) Explain with example the for loop in PL/SQL.
 - (ii) What is cursor? What are different types of cursors? List and explain different cursor attributes.
 - (iii) Write a function that is used to display factorial of a number entered by user. Also write a PL/SQL block that calls this function.
 - (iv) Explain how exceptions are handled in PL/SQL. Give suitable example.
 - (v) Create a package containing definition of a procedure, a constant and a variable. Write a PL/SQL program to use the same.
 - (vi) Explain how triggers are created. Give suitable example.

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