

Time: 2.5 Hrs

Total Marks: 75

Please check whether you have got the right question paper.

- N.B:**
1. All questions are compulsory.
 2. Figures to the right indicate full marks.
 3. Students answering in the regional language should refer in case of doubt to the main text of the paper in English.

Q1. Answer the Following: (Any 4)

(20 marks)

- a) Draw and explain the architecture of the DBMS.
- b) Explain generalization and specialization with an example.
- c) What are mapping cardinalities? Explain using suitable examples.
- d) Draw the E-R diagram for the following:
In a university, a Student enrolls in Courses. A student must be assigned to at least one or more Courses. Each course is taught by a single Professor. To maintain instruction quality, a professor can deliver only one course.
- e) Explain the different levels of Abstraction.
- f) Explain the Different referential integrity constraints.

Q2. Answer the Following: (Any 4)

(20 marks)

- a) State the six inference rules that apply to Functional Dependencies.
- b) Define Normalization. Explain 3NF with an example.
- c) What are mapping cardinalities?
- d) Write a short note on Lossless Join Decomposition.
- e) Explain the usage of following Relational algebra operations.
 - a. Union
 - b. Intersection
 - c. Set difference
 - d. Cross product
- f) Explain the following commands:
 - a. CREATE
 - b. ALTER
 - c. DROP

Q3. Answer the Following: (Any 4)

(20 marks)

- a) Explain the different types of math functions.
- b) Explain the following functions with suitable examples:
 - a. datediff()
 - b. sqrt()
 - c. ceil()
 - d. reverse()
 - e. square()

- c) Explain the role of a DBA.
- d) Explain the Discretionary Access Control Based on Granting and Revoking Privileges.
- e) Define VIEW. Explain using appropriate example.
- f) Describe concept of subqueries with example

Q4. Answer the Following: (Any 3)

(15 marks)

- a) Explain the following String Functions with suitable examples:
 - a. concat()
 - b. instr()
 - c. length()
 - d. replace()
 - e. strcmp()
- b) Describe system and object privileges and also describe use of Grant and Revoke commands with suitable example.
- c) Explain the reasons of Failure in a Database.
- d) Define Joins. Explain the Outer join with an example.
- e) Write a note on DCL.
- f) Explain the different threats to Databases.