

Question Paper

Exam Date & Time: 06-Jul-2022 (09:30 AM - 12:30 PM)



MANIPAL ACADEMY OF HIGHER EDUCATION

**INTERNATIONAL CENTRE FOR APPLIED SCIENCES
IV SEMESTER B.Sc. (Applied Sciences) in Engg.
END SEMESTER THEORY EXAMINATION - MAY/ JUNE 2022
DATABASE MANAGEMENT SYSTEMS [ICS 242 - S2]**

Marks: 50

Duration: 180 mins.

Answer all the questions.

Missing data may be suitably assumed

Design data handbook is permitted

- 1) Write a note on the different components and data structures used in storage manager. (3)
 - A)
 - B) Describe with a neat diagram the three levels of data abstraction. (3)
 - C) Define any four basic operators of relational algebra with an example for each (4)
- 2) Given the following relations (3)
 - A) Vehicle (Reg_no, make, colour)
Person(eno, name, address)
Owner(eno, reg_no)
Write expressions in the relational algebra to answer the following queries:-
 - (i) List the reg_no of vehicles owned by John
 - (ii) List the names of persons who own maruti cars.
 - (iii) List the make and reg_no of the red coloured vehicle.
 - B) Explain GROUP BY clause in SQL (3)
 - C) Describe dense and sparse indexes. Also, list the advantages and disadvantages of the two with respect to insertion and deletion. (4)
- 3) What is a view in SQL? When can views be updated? (3)
 - A)
 - B) Explain aggregation in ER Diagram with a neat example (3)
 - C) A database is to be constructed to keep track of the teams and games of a sport league. A team has a number of players, not all of whom participate (4)