# **Question Paper**

Exam Date & Time: 10-Jun-2019 (09:30 AM - 12:30 PM)



### MANIPAL ACADEMY OF HIGHER EDUCATION

### INTERNATIONAL CENTRE FOR APPLIED SCIENES IV SEMESTER B.Sc.(Applied Sciences) IN ENGINEERING END SEMESTER THEORY EXAMINATION-APRIL/MAY 2019

DATABASE MANAGEMENT SYSTEMS [ICS 242 - S2]

#### Marks: 100

#### Duration: 180 mins.

## Answer 5 out of 8 questions.

1) A)	What is Data Base Management System? What are the drawbacks of File Management Systems, that can be overcome by DBMS? Explain.	(5)
В)	What are views for DBMS? In how many ways , you can view the architecture of DBMS?	(6)
C)	Consider, the schema branch (branch_name, branch_city, assets) customer (customer_name, customer_street, customer_city) account (account_number, branch_name, balance) loan (loan_number, branch_name, amount) depositor (customer_name, account_number) borrower (customer_name, loan_number) Answer the following queries using Query Algebra. (1) Find the customers who have an account at Manipal Branch. (ii) Find the largest account balance for the system (SBI). (III) Find all the customers who have an account at all the branches located in Udupi City.	(9)
2)	Explain the division operator in query algebra, with an example.	(5)
A)		

B)

(10)



Fig 1: Data Base Scheme.

3)

4)

- i) Explain the above schema, in Fig 1 with integrity constraints.
- ii) Using SQL, find the salaries of all the faculties , that are less than the largest salary.
- iii) Find the courses offered in Mid\_Autumn 2017 and Mid\_Spring 2018.
- iv) Find all the departments where total salary is greater than the average of the total salary at all departments. ( Use of with clause is mandatory ).

v) How do you perform Insert, delete and update in SQL? Explain, with an example.

C)	Create views for faculty, course, instructor, in SQL. Explain with an example.	(5)
A)	What are the meanings of DDL and DML? Create one DDL and one DML for Q 1(c).	(7)
B)	What are Weak Entity Sets and Strong Entity Sets? Explain with an example.	(5)
C)	Give an ER diagram, for Q 1 ( c ), with account as a relationship set.	(8)
Δ)	What do you mean by Loss less join and Dependency Preserving in DBMS, with an example?	(8)
B)	What do you mean by Atomicity in DBMS? Explain With an example.	(5)
C)	Give 2 NF, for the following:	(7)

Customer_ID	Store_ID	Purchase_Location
1	1	Los Angeles
1	3	San Fransisco
2	1	Los Angeles
3	2	New York
4	3	San Fransisco

Show, how will you overcome partial dependencies.

5)

A)

Consider the following transactions:

 $T_3$  $T_4$ read (Q)write (Q) write (Q)

Are the transactions, Conflict Serializable? Explain.

- B) Write a schedule, in two transactions, which gives right answers and wrong <sup>(8)</sup> answers for the same set of instructions.
- C) (7) Give an example of acyclic graph, to make transactions Conflict Serializable.
- 6) (7) Check whether following relational schema is in BCNF, if not decompose the relation into BCNF. A)

 $R=\{A, B, C, D, E, F\}$ F= { C-> A, AE-> B, BF-> C, CD-> EF, EF->AD }

Show all the keys involved.

- B) (7) Explain the procedure of finding closure of attributes with an example.
- C) What is Memory Hierarchy? Arrange the different memories in terms of size <sup>(6)</sup> and cost.
- (5) 7) What are fixed length and variable length reords? Explain. A) (8)
  - B) Give Multi Table Clustering of two tables.

(5)

dept_name	building	budget
Comp. Sci.	Taylor	100000
Physics	Watson	70000

ID	name	dept_name	salary
10101	Srinivasan	Comp. Sci.	65000
33456	Gold	Physics	87000
45565	Katz	Comp. Sci.	75000
83821	Brandt	Comp. Sci.	92000

C)	What is recovery algorithm? Explain with an example.	(7)
	Explain the concept of B+ tree with an example.	(10)
A) B)	What are free lists in storing records in DBMS? Explain with an example.	(5)
C)	Are Roll Backs required in DBMS? Explain with an example.	(5)

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8)