PAPER ID-421678

Subject Code: KCA204

Roll No: | | | | | | | | | | | | | |

MCA
(SEM II) THEORY EXAMINATION 2021-22
DATABASE MANAGEMENT SYSTEMS

Time: 3 Hours ***Total Marks: 100***

Note: Attempt all Sections. If you require any missing data, then choose suitably.

SECTION A

1. Attempt *all* questions in brief. 2*10 = 20

Qno	Questions	CO
(a)	What do you mean by logical data independence?	1
(b)	What do you mean by domain integrity?	1
(c)	Define entity and entity set.	2
(d)	Explain with suitable example: Simple – Composite Attribute.	2
(e)	Determine the Relational Algebra expression for following- For a relation Employee(EID, Ename, city), find the name of employees who either live in Delhi or live in Mumbai.	3
(f)	There is a table named CUSTOMER (ID, Name, DOR). Write the sql query to display all the customer details. (**Note – Early Date of registration must be displayed first)**	3
(g)	What will be the possible superkeys for the relation schema R(E,F,G,H) with EF as key ?	4
(h)	Consider a relation R (A, B, C, D, E) with following FD's: A ->BC, CD -> E, B -> D, E -> A Does B -> CD? Exists over the relation R?	4
(i)	**"A transaction must follow Durability property"**. What do you mean by Durability?	5
(j)	There is a schedule S having 5 transactions. How many serial schedules can be made possible?	5

SECTION B

2. Attempt any *three* of the following: 10*3 = 30

Qno	Questions	CO
(a)	**"Data redundancy leads to data inconsistency".** Justify your answer.	1
(b)	Explain participation constraint in E-R diagram with a suitable example.	2
(c)	Write the SQL command to Create the table named STUDENT **Column Name** | **Data Type** | **Size** | **Remark** Roll | Number | 5 | Primary Key, must start with 'S' Name | Varchar2 | 25 | Null values are not allowed DOB | Date | | Email | Varchar2 | 30 | Must take unique values only DOR | Date | | Must not less than DOB	3
(d)	Suppose a relational schema R (P, Q, R, S), and set of functional dependency as following F: {P -> QR, Q -> R, P-> Q, PQ -> R}	4

MCA
(SEM II) THEORY EXAMINATION 2021-22
DATABASE MANAGEMENT SYSTEMS

	Find the canonical cover Fc	
(e)	What is system log? What are the record entries done into the system log during execution of a transaction?	5

SECTION C

3. Attempt any *one* part of the following: 10*1 = 10

Qno	Questions	CO
(a)	With a neat diagram discuss the three-level architecture of DBMS	1
(b)	What are the advantages of Database over file system?	1

4. Attempt any *one* part of the following: 10 *1 = 10

Qno	Questions	CO
(a)	Consider the assumptions a) Employee works for a department b) In one department there are many employees c) Each employee have some dependents d) Employee works in some projects Considering the above assumptions, draw an E-R Diagram. Convert the diagram to Relational Model.	2
(b)	A relation named STUDENT(Roll, Name, DOB, Address, AdharNo, Email) is there. Find out the following: a) Alternative Keys b) Non-key Attributes c) Non-Prime attributes d) Prime Attribute	2

5. Attempt any *one* part of the following: 10*1 = 10

Qno	Questions	CO
(a)	How a trigger is different from procedure? What are the uses of a trigger? Write a trigger which will insert the updated salary, the old salary of an employee along with the date of updation into a table named Employee_Backup.	3
(b)	Find out the tables named EMP(Id, Name, DOJ, DeptID, Salary), Dept(DeptId, Name, Location) Write the SQL query for the following a) Display the employee details along with the department name where the employee is working. b) Display the employees according to date of joining. (Recent joins should come first) c) Display the number of employees working in \MCA Department. d) Display the employee names whose name starts with 'Ra'.	3

MCA
(SEM II) THEORY EXAMINATION 2021-22
DATABASE MANAGEMENT SYSTEMS

	e) Display the employees who are getting more salary than what 'Rohan' is getting.	

6. Attempt any *one* part of the following: 10*1 = 10

Qno	Questions	CO
(a)	What do you mean by lose-less decomposition of a relation? Consider the relational scheme R (A,B,C,D,E,F) and FDs AB -> C, C -> A, D -> E, F -> A, E -> D Is the decomposition of R into R1 (A, C, D), R2 (B, C, D) and R3 (E, F, D) lossless?	4
(b)	What is partial functional dependency? Explain how insertion anamoly, updation anamoly and deletion anamoly occurs when a relation is having partial dependency?	4

7. Attempt any *one* part of the following: 10*1 = 10

Qno	Questions	CO
(a)	What do you mean by concurrency control? What is a timestamp? Discuss basic timestamp and strict timestamp protocol as concurrency control mechanism.	5
(b)	How serial schedule is different from non-serial schedule? What is a serializable schedule? A schedule is given as follows S: r1(X), r2(X), w1(X), r1(Y), w2(X), W1(Y) Check whether schedule S is a conflict serializable schedule or not?	5