Roll No. | | | | | | | | | |

107

COER University

END SEMESTER EXAMINATION, EVEN SEM 2022-23

Time : 3 hours
Program Name : MCA
Course Name : Advanced Database Management System

Total Marks : 100
Semester : II
Course Code : MCA203

Note: All questions are compulsory. No student is allowed to leave the examination hall before the completion of the time.

Q. No 1	Attempt Any Four Parts. Each Question Carries 5 Marks.	CO	BL
(a)	Define DBMS also describe the basic architecture of DBMS.	CO 1	1
(b)	Explain levels of data abstraction.	CO 1	2
(c)	How databases are supported around Logical and Physical data independence?	CO 1	1
(d)	How a view in banking system does secure your funds in bank account from manipulation by Bank Employees?	CO 1	2
(e)	Develop an E-R diagram for a car insurance company whose customers own one or more cars each. Each car has associated with it zero to any number of recorded accidents. Each insurance policy covers one or more cars, and has one or more premium payments associated with it. Each payment is for a particular period of time, and has an associated due date, and the date when the payment was received.	CO 1	4

Q. No 2	Attempt Any Four Parts. Each Question Carries 5 Marks.	CO	BL
(a)	Explain SQL view? How can it be created? Explain with an example.	CO 2	2
(b)	**Scenario-I: Consider that students take courses taught by Professors.** What are relationships in ERD? Which different relationships are required for scenario-I.	CO 2	2
(c)	Explain SQL join. Why do we need it?	CO 2	2
(d)	**Scenario-I: Consider that students take courses taught by Professors.** Convert ERD created above for scenario-I into set of tables required for database.	CO 2	2
(e)	Explain Primary key, Candidate key, Foreign key and Super key with the help of an example.	CO 2	2

Q. No 3	Attempt Any Four Parts. Each Question Carries 5 Marks.	CO	BL
(a)	Explain the term Normal Form. Also explain 3NF and BCNF with the help of an example.	CO 3	2
(b)	Let F1 = {A → C, AC → D, E → AD} and F2 = {A → CD, E → AH}. Are F1 and F2 are equivalent?	CO 3	4
(c)	Which type of locks needed for read and write operation?	CO 3	2
(d)	A Database called candidate is given below: Convert it into 3NF if it is not in 3rd NF.	CO 3	3
(e)	If R (A, B, C, D) be a relation schema with the following dependencies: A->B, B->C, C->A. This relation R has decomposed into two sub relation R1(A, B, C) and R2(C, D). Determine whether this decomposition is lossless decomposition or lossless join decomposition.	CO 3	4

C_NO	C_NAM	C_STATE	C_COUNTRY	C_AGE
1	TINA	MAHARASHTRA	INDIA	18
2	ANJALI	RAJASTHAN	INDIA	17
3	RAHUL	RAJASTHAN	INDIA	19

Q. No 4	Attempt Any Two Parts. Each Question Carries 10 Marks.	CO	BL
(a)	Describe the ACID Properties of a transaction.	CO 4	2
(b)	Determine count and distinct count of students in all the courses taught by a professor in (ii) One semester (i) All semesters	CO 4	4
(c)	Determine the min and max number of semesters completed by dropped students.	CO 4	4

Q. No 5	Attempt Any Two Parts. Each Question Carries 10 Marks.	CO	BL
(a)	Describe about object database concepts.	CO 5	2
(b)	Consider the universal relation $R = \{A, B, C, D, E, F, G, H, I, J\}$ and the set of FDs $F = \{\{A, B\} \rightarrow \{C\}, \{A\} \rightarrow \{D, E\}, \{B\} \rightarrow \{F\}, \{F\} \rightarrow \{G, H\}, \{D\} \rightarrow \{I, J\}\}$. I. What is the key for R? II. Decompose R into 2NF then 3NF. III. How BCNF is different from 3rd normal form?	CO 5	4
(c)	Consider the following relations for a database that keeps track of business trips of salespersons in a sale office: SALESPERSON(SSN, Name, Start-Year, Deptt-No) TRIP(SSN, From-city, To-city, Departure-date, Return-Date, Trip-ID) EXPENSE(Trip-ID, Account-No, Amount) I. Specify foreign key for the above schema. II. Obtain trips that exceeded Rs. 20000 in expenses. III. Print SSN of the sales persons who took trip to VIZAG. IV. Print the total trip expenses incurred by the salesman with SSN= '7687-987-0998'. Express queries using relational algebra.	CO 5	4

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