Examinations Commencing from 1st June 2021
Program: SE SEM IV R2019 C Scheme May 2021
Curriculum Scheme: Rev2019
Examination: SE Semester IV
Course Code: CSC403 and Course Name: Database Management System

Time: 2 hour   Max. Marks: 80

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Q1.	Choose the correct option for following questions. All the Questions are compulsory and carry equal marks
1.	Which of the following is true about Data Independence? It is the ability:
Option A:	To modify schema definition in one level without affecting schema definition in the next lower level.
Option B:	To modify schema definition in one level without affecting schema definition in the next higher level.
Option C:	To modify data in one level without affecting the data in the next lower level.
Option D:	To modify data in one level without affecting the data in the next higher level.
2.	Data redundancy leads to higher storage and access cost. It may lead to
Option A:	Data isolation
Option B:	Data inconsistency
Option C:	Integrity problem
Option D:	Atomicity
3.	The an attribute (say X) of entity set is calculated from other attribute value (say Y). The attribute X is called
Option A:	Single valued
Option B:	Multi valued
Option C:	Composite
Option D:	Derived
4.	A weak entity type always has a total participation constraint w.r.t. its identifying relationship, because

Option A:	Weak entity have a partial key
Option B:	Weak entity cannot be identified with an owner entity.
Option C:	Weak entity cannot be identified without an owner entity.
Option D:	Weak entity cannot identified without an identifying relationship
5.	In an Entity-Relationship (ER) model, suppose R is a one-to-many relationship from entity set E1 to entity set E2. Assume that E1 and E2 participate totally in R and that the cardinality of E2 is greater than the cardinality of E1. Which one of the following is true about R?
Option A:	Every entity in E1 is associated with exactly one entity in E2.
Option B:	Some entities in E1 are associated with more than one entity in E2.
Option C:	Every entity in E2 is associated with exactly one entity in E1.
Option D:	Every entity in E2 is associated with at most one entity in E1.
6.	The type of operation which extends the Projection operation by allowing functions of attributes to be included in the projection list.
Option A:	Join
Option B:	Generalized Projection
Option C:	Projection
Option D:	Aggregate functions
7.	What is union compatibility ?
Option A:	Two or more table share the same number of columns
Option B:	Two or more tables share the same number of columns and same domain
Option C:	Two or more tables have the same degree
Option D:	Two or more tables share the same domains
8.	$r \cap s =$
Option A:	$r - (r - s)$
Option B:	$s - (r - s)$
Option C:	$(r \cup s) - (r - s)$
Option D:	$(r \cup s) / (s \cup r)$

9.	Let E1 and E2 be two entities in an E-R diagram with one multi-valued attribute in E1,R1 and R2 are two relationships between E1 and E2, where R1 is one-to-many and R2 is many-to-many,R1 and R2 do not have any attributes of their own,What is the minimum number of tables required to represent this situation in the relational model.
Option A:	2
Option B:	4
Option C:	3
Option D:	5
10.	Write a query to set default value for salary to 25000 for table employee
Option A:	UPDATE employee MODIFY salary DEFAULT 25000
Option B:	UPDATE employee SET salary To DEFAULT 25000
Option C:	ALTER TABLE employee SET salary To DEFAULT 25000
Option D:	ALTER TABLE employee MODIFY salary DEFAULT 25000
11.	Consider the employee table:employee (employee id, name, dept name, salary)Create a new employee `E-101', named `Ashwin singh', with 50,000 salary for department `developer'. Identify the appropriate SQL.
Option A:	INSERT INTO TABLE employee VALUES (`E-101',`Ashwin Singh',`Wireless', 100000)
Option B:	INSERT INTO employee (`E-101',`Ashwin Singh',`DEVELOPER', 50000)
Option C:	INSERT INTO employee VALUES(`E-101',`Ashwin Singh',`DEVELOPER', 50000)
Option D:	INSERT INTO employee table(employee id, name, dept name, salary) VALUES (`E-101',`Ashwin Singh',`DEVELOPER', 50000)
12.	Consider the following instance:

Name	Price
IPHONE	5000
PHONE	1500
LAPTOP	1000
IPAD	5500

	The following Query is executed SELECT Price from Product order by Name DESC; Find out correct order of tuple numbers in the output ,if the tuple numbers in the above table are 1,2,3,4
Option A:	2,3,4,1
Option B:	3,4,2,1
Option C:	4,1,2,3
Option D:	2,3,1,4
13.	Which of the following statement is CORRECT ?
Option A:	Every relation in 3NF is also in BCNF
Option B:	A relation R is in 3NF if every non-prime attribute of R is fully functionally dependent on every key of R
Option C:	Every relation in BCNF is also in 3NF
Option D:	No relation can be in both BCNF and 3NF
14.	Let R= (A,B,C,D,E,F) be a relation with the following dependencies. C->F, E->A, EC->D, A->B. Which of the following is a key for R
Option A:	CD
Option B:	EC
Option C:	AE
Option D:	AC
15.	Consider relational schema Member(phone,name,address,room,floor,stay) which satisfies following FDs: phone,name->address Phone->Room name->floor,stay. The given relation satisfies which highest normal form?
Option A:	1NF
Option B:	2NF
Option C:	3NF

Option D:	BCNF
16.	What is true about timestamp based ordering protocol
Option A:	Ensure both conflict serializability and freedom from deadlock
Option B:	Ensure only conflict serializability
Option C:	Ensure only freedom from deadlock
Option D:	Ensure only view serializability
17.	Identify correct rules in growing phase (first phase) in two-phase locking protocol.
Option A:	Transaction can only acquire shared lock(lock-s) and exclusive (lock-X)
Option B:	transaction can only acquire shared lock(lock-s) ,exclusive (lock-X) and covert lock-s to lock-X
Option C:	transaction can release shared lock(lock-s) ,release exclusive (lock-X) and covert lock-s to lock-X
Option D:	transaction can acquire only shared lock(lock-s) and release exclusive (lock-X)
18.	Suppose in a database, there are three transactions T1, T2 and T3 with timestamp 10, 20 and 30 respectively. T2 is holding a data item which T1 and T3 are requesting to acquire. Which of the following statement is correct in respect of Wait-die Deadlock Prevention scheme?
Option A:	Transaction T1 will wait for T2 to release the data item.
Option B:	Transaction T1 will be aborted.
Option C:	Transaction T3 will wait for T2 to release the data item.
Option D:	Transaction T2 will wait for T1 to release the data item.
19.	Choose correct statement regarding immediate database modification method of log based recovery method
Option A	Only Redo operation is performed
Option B:	Redo and undo operations are performed
Option C:	Only undo operation is performed
Option D:	No redo and undo operations are performed

20.	When transactions execute properly without interference from concurrently executing transactions then this property is referred to as.
Option A:	Atomicity
Option B:	Concurrency
Option C:	Consistency
Option D:	Isolation

Q2	Solve any Two Questions out of Three 10 marks each
A	What are different database users? Give responsibilities of DBA
B	Produce ER Diagram from the following relational database Schema. **BOOK** Book_id | Title | Publisher_name **BOOK_AUTHORS** Book_id | Author_name **PUBLISHER** Name | Address | Phone **BOOK_COPIES** Book_id | Branch_id | No_of_copies **BOOK_LOANS** Book_id | Branch_id | Card_no | Date_out | Due_date **LIBRARY_BRANCH** Branch_id | Branch_name | Address **BORROWER** Card_no | Name | Address | Phone
C	Book(book_id, title,author, cost) Store(store_no, city, state, inventory_val) Stock(store_no, book_id,quantity) Consider above relational schema and formulate SQL queries for the following: (i)Modify the cost of DBMS books by 10% (ii)Find the author of the books which are available in Mumbai store (iii)Find the title of the most expensive book (iv)Find the total quantity of books in each store (v) Add a new record in Book(Assume values as per requirement)

Q3	Solve any Two Questions out of Three 10 marks each
A	Consider a dependency diagram of relation R and normalize it up to third normal form.

B	Explain conflict and view serializability with suitable examples .
C	Explain deadlock handling in DBMS with suitable examples.

University of Mumbai
Examination June 2021
Examinations Commencing from 1ˢᵗ June 2021
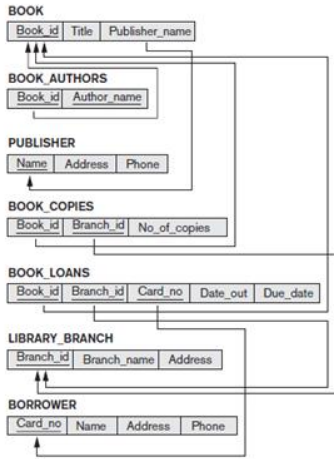Program: SE SEM IV R2019 'C' Scheme May 2021
Curriculum Scheme: Rev2019
Examination: BE Semester VIII
Course Code: CSC403 and Course Name: Database Management System

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Question Number	Correct Option (Enter either 'A' or 'B' or 'C' or 'D')
Q1.	B
Q2.	B
Q3.	D
Q4	C
Q5	C
Q6	B
Q7	B
Q8.	A
Q9.	B
Q10.	D
Q11.	C
Q12.	D
Q13.	C
Q14.	B
Q15.	A
Q16.	A
Q17.	B
Q18.	A
Q19.	B
Q20.	D

Q2	Solve any Two Questions out of Three 10 marks each
A	What are different database users? Give responsibilities of DBA **Types of users 5 marks** **responsibilities of DBA(at least 5) 5 marks**
B	Produce ER Diagram from the following relational database Schema. **Solution :** **Correctly identification of entity , attributes and relationship - 5 marks** **ER diagram with all components – 5 marks**
C	Book(book_id, title,author, cost) Store(store_no, city, state, inventory_val) Stock(store_no, book_id,quantity) Consider above relational schema and formulate SQL queries for the following: (i)Modify the cost of DBMS books by 10% **update book** **set cost=cost+cost*0.1** **where title='DBMS'** (ii)Find the author of the books which are available in Mumbai store **Select author from book b,store s,stock st** **where st.store_no=s.store_no and st.book_id=b.book_id and s.city='Mumbai';** (iii)Find the title of the most expensive book **Select title from book where cost=(select max(cost) from book)** (iv)Find the total quantity of books in each store **Select sum(quantity) from stock group by store_no**

	(v) Add a new record in Book(Assume values as per requirement)
	insert into book values(5,'DBMS','Korth',1000)

Q3	Solve any Two Questions out of Three 10 marks each
A	Consider a dependency diagram of relation R and normalize it up to third normal form. ![Proj_no Proj_name Emp_no Emp_name Job_class Chg_hr Hrs_billed] solution: **Identify FD 2marks** **decomposition 2NF and 3NF 4 marks each**
B	Explain conflict and view serializability with suitable examples . **Conflict serializability with example 5 marks** **view serializability with example 5 marks**
C	Explain deadlock handling in DBMS with suitable examples. **Deadlock definition with example 4 marks** **Handling(both techniques) 6 marks**