

**University of Mumbai**  
**Examination 2021 under cluster 7 (Lead College: SSJCOE)**  
**Examinations Commencing from 10<sup>th</sup> April 2021 to 17<sup>th</sup> April 2021**

Program: **Information Technology**

Curriculum Scheme: Rev2019

Examination: SE Semester III (DSE)

Course Code: ITC303 and Course Name: Database Management System

Time: 2 hour

Max. Marks: 80

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<b>Q1.</b>	<b>Choose the correct option for following questions. All the Questions are compulsory and carry equal marks</b>
1.	The database environment has all of the following components except:
Option A:	User
Option B:	Admin
Option C:	Database
Option D:	Seperate file
2.	The form of data model which focuses on the concepts in the same way as the data stored in computer system is classified as
Option A:	High level data model
Option B:	Medium level data model
Option C:	Dynamic data model
Option D:	Low level data model
3.	Cardinality is termed as
Option A:	Number of tuples
Option B:	Number of tables
Option C:	Number of attributes
Option D:	Number of constraints
4.	An entity set that does not have sufficient attributes to form a primary key is called
Option A:	Strong entity set
Option B:	Weak entity set
Option C:	Simple entity set
Option D:	Primary entity set
5.	Generalization and specialization lattices are classified as
Option A:	Multiple aggregation
Option B:	Single inheritance
Option C:	Single aggregation
Option D:	Multiple inheritance
6.	Which operation of relation X produces Y, such that Y contains only selected attributes of X ?
Option A:	Projection

Option B:	Intersection
Option C:	Difference
Option D:	Union
7.	If E1 and E2 are relational algebra expressions. Then which of the following is not a relational algebra expression?
Option A:	$E1 \cup E2$
Option B:	$E1 - E2$
Option C:	$E1 / E2$
Option D:	$E1 \times E2$
8.	Using Relational Algebra, the query that finds customers, who have a balance of over 1000 is
Option A:	$\Pi$ Customer name( $\sigma$ balance >1000(Deposit))
Option B:	$\sigma$ Customer name( $\Pi$ balance >1000(Deposit))
Option C:	$\Pi$ Customer name( $\sigma$ balance >1000(Borrow))
Option D:	$\sigma$ Customer name( $\Pi$ balance >1000(Borrow))
9.	In relational algebra rename is _____ and difference is _____.
Option A:	A unary operator, a unary operator
Option B:	A binary operator, a unary operator
Option C:	A binary operator, a binary operator
Option D:	A unary operator, binary operator
10.	If matching tuples are not found, the kind of OUTER JOIN operation which keeps all the tuples of first and second relation is classified as
Option A:	LEFT OUTER JOIN
Option B:	FULL OUTER JOIN
Option C:	HALF OUTER JOIN
Option D:	DOWNWARD JOIN
11.	SELECT * FROM employee WHERE salary>10000 AND dept_id=101; Which of the following fields are displayed as output?
Option A:	Salary,dept id
Option B:	Employee
Option C:	Salary
Option D:	All the field of employee relation
12.	Which of the following statements contains an error ?
Option A:	Select * from emp where empid = 10003;
Option B:	Select empid from emp where empid = 10006;
Option C:	Select empid from emp;
Option D:	Select empid where empid = 1009 and lastname = 'GELLER';
13.	All aggregate functions except _____ ignore null values in their input collection.
Option A:	Count(attribute)
Option B:	Count(*)
Option C:	Avg
Option D:	Sum

14.	SELECT course_id FROM physics_fall_2009 WHERE building= 'Watson'; Here the tuples are selected from the view. Which one denotes the view.
Option A:	Course_id
Option B:	Watson
Option C:	Building
Option D:	Physics_fall_2009
15.	Which of the following creates a virtual relation for storing the query?
Option A:	Function
Option B:	Procedure
Option C:	View
Option D:	Cursor
16.	Which Normal form has the requirement of atomic attribute?
Option A:	2 NF
Option B:	3 NF
Option C:	BCNF
Option D:	1 NF
17.	Choose the valid functional dependency for the relation:inst_dept (ID, name, salary, dept name, building, budget)
Option A:	salary→building
Option B:	ID, dept name→ name, salary, building, budget
Option C:	budget→ dept name
Option D:	building→ salary
18.	A functional dependency of the form $A \rightarrow B$ is trivial if
Option A:	$B \subseteq B$
Option B:	$B \subseteq A$
Option C:	$A \subseteq B$
Option D:	$A \subseteq A$
19.	$A \rightarrow B$ and $B \rightarrow C$ introduces
Option A:	$A \rightarrow B$
Option B:	$B \rightarrow C$
Option C:	$A \rightarrow C$
Option D:	$C \rightarrow A$
20.	BCNF is stricter than
Option A:	1NF
Option B:	2NF
Option C:	3NF
Option D:	4NF

<b>Q2 (20 Marks )</b>	<b>Solve any Four out of Six</b>	<b>5 marks each</b>
A	Construct an E-R diagram for a hospital with a set of patients and a set of medical doctors. Associate with each patient a log of the various tests and examinations conducted. Convert this E-R diagram into schema..	
B	Define derived attribute. State the need with suitable example	
C	What are the types of Join? Explain each with examples.	
D	Explain the following Relational algebra operations with proper examples. (i) Set Intersection (ii) Union	
E	Explain the following. (i) DDL (ii) DML with example.	
F	Write SQL queries for the given database . Sailor(sid,sname, rating, age) Boat(bid, bname, color) Reserves(sid, bid, date) (i) Find the average age of the sailor. (ii) Add a new record into the Boat. Assume any values for required attributes.	

<b>Q3 (20 Marks )</b>	<b>Solve any Four out of Six</b>	<b>5 marks each</b>
A	Explain First Normal Form with an example.	
B	Explain transitive functional dependency .	
C	Consider the following relation: CAR_SALE(Car#, Date_sold, Salesperson#, Commission%, Discount_amt). List all the functional dependencies in the given relation.	
D	Explain minimal sets of functional dependencies.	
E	List properties of Relational Model	
F	What is View ? How is it created and stored ?	

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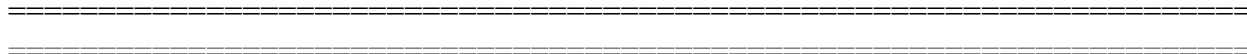
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<b>Question Number</b>	<b>Correct Option (Enter either 'A' or 'B' or 'C' or 'D')</b>
Q1.	A
Q2.	D
Q3.	A
Q4	B
Q5	D
Q6	A
Q7	C
Q8.	A
Q9.	D
Q10.	B
Q11.	D
Q12.	D
Q13.	B
Q14.	D
Q15.	C
Q16.	D
Q17.	B
Q18.	B
Q19.	C
Q20.	C