University of Mumbai
Examination 2020 under cluster 7 (Lead College: SSJCOE)
Examinations Commencing from 15th June 2021 to 24th June 2021

Program: **Information Technology**
Curriculum Scheme: Rev-2019

Examination: SE   Semester III
Course Code: ITC303   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.	In the architecture of a database system external level is the _____ level
Option A:	conceptual
Option B:	physical
Option C:	logical
Option D:	view
2.	___ is not an Schema.
Option A:	Database Schema
Option B:	Physical Schema
Option C:	Logical Schema
Option D:	Critical Schema
3.	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
4.	Considering the constraints of generalization and specialization the constraints of disjoints and completeness is usually
Option A:	independent
Option B:	dependent
Option C:	not calculated
Option D:	undefined
5.	Cardinality is termed as
Option A:	Number of tuples.
Option B:	Number of tables
Option C:	Number of attributes.
Option D:	Number of constraints.

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.	Using Relational Algebra the query that finds customers, who have a balance of over 1000 is
Option A:	Π Customer_name(σ balance >1000(Deposit))
Option B:	σ Customer_name(Π balance >1000(Deposit))
Option C:	Π Customer_name(σ balance >1000(Borrow))
Option D:	σ Customer_name(Π balance >1000(Borrow))
8.	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
9.	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';
10.	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
11.	Which of the following creates a virtual relation for storing the query?
Option A:	Function
Option B:	Procedure
Option C:	View
Option D:	Cursor
12.	Which operator test column for the absence of data?
Option A:	EXISTS operator
Option B:	NOT operator
Option C:	IS NULL operator
Option D:	LIKE operator

13.	Which Normal form has the requirement of atomic attribute?
Option A:	2 NF
Option B:	3 NF
Option C:	BCNF
Option D:	1 NF
14.	A functional dependency of the form A→ B is trivial if –
Option A:	$B \subseteq B$
Option B:	$B \subseteq A$
Option C:	$A \subseteq B$
Option D:	$A \subseteq A$
15.	Which process is performed by the normalization to remove data redundancy from relations?
Option A:	Merge relations into one
Option B:	Add new columns in existing relations
Option C:	Remove columns from existing relations
Option D:	Decompose relations into smaller relations
16.	Which normal form has the requirement: Every non-prime attribute is fully functionally dependent on every key of R.
Option A:	1NF
Option B:	2NF
Option C:	3NF
Option D:	BCNF
17.	What is the requirement of the Atomicity property of Transaction?
Option A:	Execute operations completely
Option B:	Execute all operations or none at all
Option C:	Execute operations partially
Option D:	Execute some operations only
18.	Which component of DBMS handles the database consistency?
Option A:	Transaction Manager
Option B:	Authorization & Integrity manager
Option C:	Concurrency-control manager
Option D:	Buffer Manager
19.	Which component of DBMS handles the grant of locks on data items?
Option A:	Transaction Manager
Option B:	Concurrency-control manager
Option C:	File Manager
Option D:	Buffer Manager
20.	Which of the following systems is responsible for ensuring isolation?
Option A:	Recovery system
Option B:	Atomic system
Option C:	Concurrency control system

Option D:	Compiler system

Q2 (20 Marks)	Solve any Four out of Six 5 marks each
A	Discuss the advantages of DBMS over the File system.
B	Define derived attribute. State the need with suitable example.
C	Explain the following Relational algebra operations withsyntax and query. (i)Set Intersection (ii) Union.
D	Define (i) DDL (ii) DML. Illustrate each with a suitable example.
E	Consider the following relation. | A	B	C	Tuple#
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10	b1	C1	#1
10	b2	C2	#2
11	b4	C1	#3
12	b3	C4	#4
13	b1	C1	#5
14	b3	C4	#6	 Given the previous state, which of the following dependencies may hold in above relation?If dependency cannot hold explain why by specifying the tuples that cause the violation. 1)A->B 2)B->C .
F:	Draw and explain transaction state diagrams.

Q3 (20 Marks)	Solve any Four out of Six 5 marks each
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 a schema.
B	Differentiate view and conflict serializability.
C	What are different types of Join? Explain any two with examples.
D	What is Functional Dependency?Define different types of it.
E	Consider the following relations for a book club: Members(Member-Id, Name, Designation, Age) Books(Book-Id , Book Title, BookAuthor, Bookpublisher, Book Price) Reserves(Member-Id, Book-Id, Date) Write SQL queries for following statements. (i) Find the names of members who are professors older than 50 years.(ii) List the titles of books reserved by professors.
F	Justify the need of DBMS in Banking and Airlines.

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