Program: **Information Technology**
Curriculum Scheme: Rev2019
Examination: SE (DSE) 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.	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
2.	Every weak entity set can be converted into strong entity set by
Option A:	Using generalization
Option B:	adding appropriate attribute
Option C:	Using aggregation
Option D:	Using Specialization
3.	In an ER diagram simple attributes are represented by ------ and derived attributes are represented by ------.
Option A:	ellipse, dashed ellipse
Option B:	dashed ellipse, double ellipse
Option C:	ellipse, double ellipse
Option D:	dashed ellipse, ellipse
4.	In relation schema of binary relationship set with one to one mapping cardinality, the primary key is created Using
Option A:	Primary Keys of both participating entity sets
Option B:	Primary key of entity set pointing towards one side
Option C:	Primary key of entity set pointing towards many side
Option D:	Primary key of any one participating entity set
5.	Cardinality represents
Option A:	Number of constraints
Option B:	Number of tuples.
Option C:	Number of tables
Option D:	Number of attributes
6.	Consider R1 and R2 as input relations.The relational algebra operation --------produces the relation that has the attributes of R1 and R2 in it.
Option A:	Cartesian product

Option B:	Difference
Option C:	Intersection
Option D:	Product
7.	Which operation on relation X produces relation Y, such that Y contains only selected tuples of X
Option A:	projection
Option B:	intersection
Option C:	selection
Option D:	union
8.	If E1 and E2 are relational algebra expressions. Then which of the following is not a relational algebra expression?
Option A:	E1 / E2
Option B:	E1 X E2
Option C:	E1 U E2
Option D:	E1 - E2
9.	Using Relational Algebra the query that finds customers, who have a balance below 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))
10.	In relational algebra, intersection is_____ operator and rename is _____operator .
Option A:	unary , unary
Option B:	binary , unary
Option C:	binary , binary
Option D:	unary , binary
11.	which of the following displays the unique values of the column? SELECT _____ dept_name FROM instructor;
Option A:	All
Option B:	From
Option C:	Distinct
Option D:	Name
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 of the following statements contains an error ?
Option A:	Select empid where empid = 1009 and lastname = 'GELLER';
Option B:	Select empid from emp;
Option C:	Select empid from emp where empid = 10006;

Option D:	Select * from emp where empid = 10003;
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.	In SQL,------ creates a virtual relation .
Option A:	Function
Option B:	Procedure
Option C:	View
Option D:	Cursor
16.	In SQL, for adding new attribute A with domain D to an existing relation r, which of the following command is used ?
Option A:	alter table r add A
Option B:	alter table r add A D
Option C:	update table r add A
Option D:	update table r add A D
17.	B in BCNF stands for-
Option A:	Bouston
Option B:	Bold
Option C:	Back
Option D:	Boyce
18.	Third Normal Form has the requirement of-
Option A:	Transitive Dependency
Option B:	Multivalued Dependency
Option C:	Trivial Functional Dependency
Option D:	Non-Trivial Functional Dependency
19.	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
20.	The notation A-> B is used to denote
Option A:	Non-transitive dependency
Option B:	Transitive dependency
Option C:	Functional dependency
Option D:	Reflexive dependency

Q2 (20 Marks)	Solve any Four out of Six	5 marks each
A	Design an ER diagram for education databases that contains information about an inhouse company education training scheme. The relevant relations are course(course_no, title) offering(course_no, offer_no, off_date, location) teacher(coure_no, offer_no, emp_no) enrolment(course_no, off_no, stud_no, grade) employee(emp_no, emp_name, job) student(stud_no, stud_name, ph_no)	
B	Explain with example any two Fundamental Operations in Relational Algebra.	
C	What is JOIN? Differentiate between Left and Right outer join with examples.	
D	Consider the following relations for a book club: Members(Member-Id, Name, Designation, Age) Books(Book-Id , Booktitle, BookAuthor, Bookpublisher, Bookprice) 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.	
E	Explain the following. i) DCL ii) DML	
F	Define Boyce-Codd normal form. How does it differ from 3NF?	

Q3. (20 Marks)	Solve any Four out of Six	5 marks each
A	Differentiate Strong and weak entities .	
B	Explain Generalization & specialization with suitable examples.	
C	Explain the following Relational algebra operations with suitable examples. (i)Set Difference (ii) Division	
D	What are aggregate functions in SQL? Explain any two with examples.	
E	Explain with example any two integrity constraints in SQL .	
F	What is Normalization ? Justify its need.	

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