



BRAINWARE UNIVERSITY

Term End Examination 2022

Programme – B.Tech.(ECE)-2019/B.Tech.(ECE)-2020

Course Name – Data Base Management Systems

Course Code - OEC501A

(Semester V)

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Full Marks : 60

Time : 2:30 Hours

[The figure in the margin indicates full marks. Candidates are required to give their answers in their own words as far as practicable.]

Group-A

(Multiple Choice Type Question)

1 x 15=15

1. Choose the correct alternative from the following :

- (i) The term _____ is used to define a row.
- | | |
|--------------|-------------|
| a) Attribute | b) Tuple |
| c) Field | d) Instance |
- (ii) Which one of the following defines a set of one or more attributes taken collectively to uniquely identify a record?
- | | |
|------------------|----------------|
| a) Candidate key | b) Sub key |
| c) Super key | d) Foreign key |
- (iii) ER can be defined as
- | | |
|--------------------|------------------------|
| a) Entity relation | b) Entity relationship |
| c) Entity row | d) Entity rename |
- (iv) Select the fundamental operation in relational algebra?
- | | |
|---------------------|------------------|
| a) Set intersection | b) Natural join |
| c) Assignment | d) None of these |
- (v) A _____ indicates a pictorial depiction of the schema of a database that shows the relations in the database, their attributes, and primary keys and foreign keys.
- | | |
|---------------------|-----------------------|
| a) Schema diagram | b) Relational algebra |
| c) Database diagram | d) Schema flow |
- (vi) Select the statement containing an error?
- | | |
|---|--|
| a) Select * from emp where empid = 10003; | b) Select empid from emp where empid = 10006; |
| c) Select empid from emp; | d) Select empid where empid = 1009 and lastname =GELLER; |
- (vii) Insertion of a large number of entries at a time into an index is referred to as _____ of the index.
- | | |
|------------------|-----------------------|
| a) Loading | b) Bulk insertion |
| c) Bulk loading. | d) Increase insertion |
- (viii) Which of the following are the process of selecting the data storage and data access characteristics of the database?

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- a) Logical database design
- b) Physical database design
- c) Testing and performance tuning
- d) Evaluation and selecting
- (ix) Determine if index take space in the disk?
 - a) It stores memory as and when required
 - b) Yes, Indexes are stored on disk
 - c) Indexes are never stored on disk
 - d) Indexes take no space
- (x) Estimate the property of a transaction that persists in all the crashes
 - a) Atomicity
 - b) Durability
 - c) Isolation
 - d) All of these
- (xi) Select which of the following protocols ensures conflict serializability and safety from deadlocks?
 - a) Two-phase locking protocol
 - b) Time-stamp ordering protocol
 - c) Graph based protocol
 - d) None of these
- (xii) In the _____ scheme, a transaction that wants to update the database first creates a complete copy of the database.
 - a) Shadow copy
 - b) Shadow Paging
 - c) Update log records
 - d) All of these
- (xiii) The _____ scheme uses a page table containing pointers to all pages; the page table itself and all updated pages are copied to a new location.
 - a) Shadow copy
 - b) Shadow paging
 - c) Update log records
 - d) None of these
- (xiv) servers which is widely used to formulate relational database systems.
 - a) Data servers
 - b) Transaction servers
 - c) Query servers
 - d) Client servers
- (xv) is an essential process where intelligent methods are applied to generalize the extraction of data patterns.
 - a) Data warehousing
 - b) Text mining
 - c) Data mining
 - d) Data selection

Group-B

(Short Answer Type Questions)

3 x 5=15

- 2. Discuss in detail the operators SELECT, PROJECT, UNION with suitable example? (3)
- 3. Report Multi valued Dependency with a suitable example. (3)
- 4. Develop an ER diagram for a travel agency consisting of the following: Customers, buses, drivers, conductors, guides, tickets, booking, agents, reservations, conducted tours, and hotels. (3)
- 5. Illustrate the fully Functional Dependency with a suitable example. (3)
- 6. Estimate the multi-version two-phase locking with the lock conversion technique. (3)

OR

Illustrate the ACID properties of a transaction.

(3)

Group-C

(Long Answer Type Questions)

5 x 6=30

7.

Analysis the schedule whether it is conflict or serial schedule. If conflict then write down the equivalent serial schedule:

T ₁	T ₂	T ₃
		R(y)
		R(z)
R(x)		
W(x)		
		W(y)
	R(z)	W(y)
R(y)		
W(y)		
	R(y)	
	W(y)	
	R(x)	
	W(x)	

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8. Describe the following terms: Data Redundancy and consistency Explain Referential Integrity Data atomicity Domain constraints Data models (5)

9. Consider the following relation REFRIG (Model, Year, Price, Manuf_plant, Color) and with the following dependencies: (5)

$$F = \{M \rightarrow MP, \{M, Y\} \rightarrow P, MP \rightarrow C\}$$

Identify each of the following as a candidate key for REFRIG, giving reasons why it can or cannot be a key: { M }, {M, Y}, { M, C }

10. Explain the following: (5)

a) Ternary relationship, b) Weak entity set,

c) Grouping d) Aggregation.

11. Explain the two-phase locking protocol with a proper example. (5)

12. Test the functions of data warehouse tools and utilities. (5)

OR

Justify the need of OLTP and OLAP and their differences? (5)
