



BRAINWARE UNIVERSITY

Term End Examination 2018 - 19

Programme – Bachelor of Computer Application

Course Name - Database Management Systems

Course Code – BCA401

(Semester – 4)

Time allotted: 3 Hours

Full Marks : 70

[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)

10 x 1 = 10

1. *Choose the correct alternative from the following*
 - (i) A transaction is in _____ state after the final statement has been executed.
 - a. partially committed
 - b. active
 - c. committed
 - d. none of the above
 - (ii) B+ Tree is
 - a. Primary Indexing
 - b. Secondary Indexing
 - c. Multilevel Indexing
 - d. Clustered Indexing
 - (iii) DML is provided for
 - a. description of logical structure of database.
 - b. addition of new structures in the database system
 - c. manipulation & processing of database
 - d. definition of physical structure of database
 - (iv) The result of the UNION operation between R1 and R2 is a relation that includes
 - a. All the tuples of R1
 - b. All the tuples of R2
 - c. All the tuples of R1 and R2.
 - d. All the tuples of R1 and R2 which have common columns.
 - (v) To remove duplicate rows from the results of an SQL SELECT statement, the _____ qualifier specified must be included.
 - a. UNION
 - b. UNIQUE
 - c. DISTINCT
 - d. SELECT

- (vi) Which index is specified on the non-ordering fields of a file ?
- a. Primary
 - b. Secondary
 - c. Clustering
 - d. None of these
- (vii) The ability to modify the internal schema without causing any change to logical schema is
- a. Physical data independence
 - b. Logical data independence
 - c. External data independence
 - d. None of these
- (viii) A functional dependency is a relationship between or among:
- a. tables
 - b. rows
 - c. Relations
 - d. attributes
- (ix) The process of converting complex object data structures into well-structured relations is called:
- a. Object-relational modeling.
 - b. Normalization.
 - c. Referential integrity.
 - d. Determinant analysis.
- (x) All aggregate functions except _____ ignore null values in their input collection.
- a. Count(attribute)
 - b. Count(*)
 - c. Avg
 - d. Sum

Group – B

(Short Answer Type Questions)

3 x 5 = 15

Answer any *three* from the following

2. What do you mean by Database Administrator? Mention the role of DBA? (2+3)
3. What are the different type of indexing? Write the difference between B tree and B+ tree? (3+2)
4. What are the difference between entity integrity and referential integrity? (2+3)
Explain logical data independence and physical data independence?
5. Explain BCNF with suitable example. Explain 2nd Normal Form. (3+2)
6. What are different types of relational database keys? Explain with example. (5)

Group – C

(Long Answer Type Questions)

3 x 15 = 45

Answer any *three* from the following

7. Draw the ERD of Library Management System? Explain generalization, specialization and aggregation in ERD. Write down the difference between inner join and outer join. (7+6+2)

8. (a) What are the different phases of query processing. Explain with a diagram. (8)
- (b) Find out closure of attribute set (AG) in the relational schema R and set of functional dependencies F as given below : (5+2)
- $R = (A, B, C, G, H, I)$
 $F = \{ A \rightarrow B, A \rightarrow C, CG \rightarrow H, CG \rightarrow I, B \rightarrow H \}$

Is (AG) is a super key of R?

9. (a) Define Transaction. Describe the properties of a Transaction. (1+4)
- (b) Define 2PL. What do you mean by Strict 2PL? (3+2)
- (c) What is a Schedule? When are two operations said to be in conflict. (2+3)

10. Consider the following schema of a relational database : (3 x 5=15)
- Hotel(Hno, Name, Address)
Room(Rno, Rtype, Hno, Price)
Booking(Hno, Gno, Rno, Dt_from, DT_to)
Guest(Gno, Gname, GAddress)

For each of the following queries write an expression for relational Algebra or SQL :

- (a) Find the names of all guests who are staying in hotels either in Kolkata or Chennai.
- (b) Find the total number of guests in hotel Taj.
- (c) List the number of rooms in each hotel.
- (d) Find the room with maximum price.
- (e) Find the hotel with maximum number of rooms.
11. Write short notes on (any three) : (5 x 3=15)
- (a) Normalization.
- (b) Strict 2PL.
- (c) ACID Property of transaction.
- (d) Dynamic Multilevel Indexing.
- (e) Data Independence.
