



BRAINWARE UNIVERSITY

Course – MAMW

DBMS (MMW302B)

(Semester – 3)

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 Questions)

10 x 1 = 10

1. *Choose the correct alternative from the following*

- (i) Which of the following has “all-or- none” property?
- | | |
|--------------|----------------|
| a. Atomicity | b. Durability |
| c. Isolation | d. Consistency |
- (ii) Which of the following creates a virtual relation for storing the query?
- | | |
|--------------|-------------------|
| a. Function | b. View |
| c. Procedure | d. None of these. |
- (iii) The ___ condition allows a general predicate over the relations being joined.
- | | |
|--------|----------|
| a. On | b. Using |
| c. Set | d. Where |
- (iv) What type of join is needed when you wish to include rows that do not have matching values?
- | | |
|---------------|-----------------|
| a. Equi-join | b. Natural join |
| c. Outer join | d. All of these |
- (v) '___' matches any string of _____ three characters. '___%' matches any string of at _____ three characters.
- | | |
|----------------------|----------------------|
| a. at least, exactly | b. exactly, at least |
| c. at least, all | d. all , exactly |

- (vi) Aggregate functions are functions that take _____ as input and return a single value.
- collection of values
 - single value
 - aggregate value
 - both a and b
- (vii) A collection of instructions that performs a single logical function implies _____.
- transaction
 - operation
 - function
 - all of these
- (viii) A locking protocol is one that _____.
- governs how locks are acquired
 - governs how locks are released
 - governs how locks are acquired and released
 - belongs to none of these
- (ix) Which of the following is not a recovery technique?
- Deferred update
 - Immediate update
 - Two-phase commit
 - Recovery management
- (x) _____ is an alternative of log based recovery.
- Disk recovery
 - Shadow paging
 - Dish shadowing
 - Crash recovery

Group – B

(Short Answer Type Questions)

(Answer any *three* from the following)

- | | |
|---|---------------------|
| 2. What is transaction? Explain with diagram different states of transaction. | 3 x 5 = 15
[1+4] |
| 3. Describe three schema architecture in DBMS. | [5] |
| 4. Explain the concept of entity integrity and referential integrity. | [5] |
| 5. Explain different types of data anomalies with examples. | [5] |
| 6. Compare the following with example | |
| i. WHERE clause and HAVING clause | |
| ii. DELETE and DROP | |
| iii. UNION and UNION ALL | [2+2+1] |

Group – C

(Long Answer Type Questions)
(Answer any *three* from the following)

3 x 15 = 45

7. (a) Consider the following relation R(A,B,C,D,E) and FD's $A \rightarrow BC$, $C \rightarrow A$, $D \rightarrow E$, $F \rightarrow A$, $E \rightarrow D$. Is the decomposition of R into R1(A, C, D), R2(B,C, D) and R3(E,F,D) lossless? [5]
- (b) Lots(propertyid, country_name, lot#, area, price, tax_rate)
FD :- {propertyid \rightarrow country_name, lot#, area, price
country_name, lot# \rightarrow propertyid, area, price, tax_rate
country_name \rightarrow tax_rate
area \rightarrow price }
Normalize it upto BCNF. [10]
8. (a) Write difference between procedure and function. [5]
(b) What is trigger? Explain with example. [2+3]
(c) Write a pl/sql program to display the number in reverse order. [5]
9. (a) Employee(empno,empname,city)
Project(pno,pname)
Part(partno,partname,color)
Use(pno,partno)
Works(emppno,pno)
i. Name of employees who are working on more than 1 project.
ii. Name of the cities where the maximum employees are located.
iii. Part names which are used in all the projects.
iv. Name of the projects in which no employees are working, whose name start with 's'.
v. Name of the project which use maximum red part. [10]
- (b) Explain the following:
a) Ternary relationship b) Weak entity set c) Specialization [5]
10. (a) How strict two phase locking differ from rigorous two phase locking. [5]

- (b) Briefly explain timestamp based protocol. [5]
- (c) Draw an ER Diagram for the following system given as follows:
An organization has number of faculties who are expert in one or more subjects. For each subject, number of such experts is there. System will store faculty and subject information and must support query on finding expertise on subjects. Students get enrolled to have training in one or more subjects. System will keep student information also. One faculty is allotted to teach one or more subjects and for one subject only one faculty is assigned. System will keep the information regarding such assignment. [5]
11. (a) Explain log based recovery technique. [5]
- (b) Compare deferred database modification and immediate database modification. [5]
- (c) Let transaction T1,T2,T3 be three transaction operating on some data A,B,C. Consider the schedule
R2(C),R2(B),W2(B),R3(B),R3(C),R1(A),W1(A),W3(B),W3(C),
R2(A),R1(B),W1(B),W2(A).
Is this schedule serializable? [5]