

2019-20
UTKAL UNIVERSITY
INTEGRATED MCA
7TH SEMESTER
SUB: DATABASE IMPLEMENTATION
(PAPER-7.1)

Time: 3 hours

F.M: 70

(Answer *All* questions)

GROUP-A

1. Answer the following in one or two sentences. **[1x10=10]**
- (a) What is Serialization?
 - (b) What is two-phase locking?
 - (c) What are uses of system log?
 - (d) What is object oriented database?
 - (e) Define encryption and decryption.
 - (f) What is Distributed database?
 - (g) What is Data warehouse?
 - (h) Define support and confidence.
 - (i) What is Data mining?
 - (j) What is OLAP?

GROUP-B

[12x5=60]

2. (a) What is transaction? What are the states of transaction? **[6]**
- (b) Discuss ACID properties of transaction? **[6]**
- OR**
- (c) Define conflict serializable. Is the schedules is conflict serializable schedule? **[6]**
- S: $r_2(A); r_1(B); w_2(A); r_2(B); r_3(A); w_1(B); w_2(B)$
- (d) Discuss different types of database failure. **[6]**
3. (a) What is concurrency problem. Discuss different concurrency control technique with examples. **[7]**
- (b) Discuss Deadlock prevention protocol with an example. **[5]**
- OR**
- (c) Discuss RSA public key encryption algorithm with an example. **[6]**
- (d) Explain Diffie and Hellman key generation algorithm with suitable example. **[6]**
4. (a) What are the advantages and disadvantages of distributed database? **[6]**
- Discuss the types of distributed database and database fragmentation?

(b) Draw a graphical object database schema for part of UNIVERSITY database. [6]

OR

(c) Apply the Apriori algorithm for the following data set. [6]

T_Id	Item_Purchased
1	milk,bread,eggs
2	milk,juice
3	juice,butter
4	milk,bread,eggs
5	coffie,eggs
6	coffie

Use 2 for the minimum support value.

(d) Show the FP tree that would be made for the above data. [6]

5. (a) Discuss K-mean clustering algorithm. [6]

(b) Consider the following set of 2-D records. [6]

R_Id	X	Y
1	2	8
2	5	4
3	8	4
4	2	6
5	2	4
6	8	6

Use the k-mean clustering algorithm to cluster the data, we take the value K=3 and Assume record Id 1, 3 and 5 are used for initial cluster centroids (mean).

OR

(c) Given the training data. [6]

Name	Acid Durability	Strength	Class
Type-1	7	4	Bad
Type-2	3	4	Good
Type-3	1	4	Good
Type-4	7	7	Bad

Classify the data using k-nearest neighbor algorithm if Acid durability=3, Strength=7.

(d) Compare OLAP with OLTP. [6]

6. Write notes on: (Any four) [3x4=12]

- (a) Multimedia database
- (b) Spatial database
- (c) Knowledge database
- (d) Web database
- (e) Shadow paging
- (f) Distributed query processing