



# MAULANA ABUL KALAM AZAD UNIVERSITY OF TECHNOLOGY, WEST BENGAL

Paper Code : PEC-IT601B Distributed Systems

UPID : 006590

Time Allotted : 3 Hours

Full Marks : 70

The Figures in the margin indicate full marks.

Candidate are required to give their answers in their own words as far as practicable

## Group-A (Very Short Answer Type Question)

1. Answer any ten of the following : [ 1 x 10 = 10 ]
- (I) What is data replication?
  - (II) What is minterm predicate?
  - (III) Define homogeneous distributed database.
  - (IV) What is the maximum no of functional dependencies (trivial and non-trivial) of a relation R of degree n?
  - (V) Write the full form of OLAP.
  - (VI) What is data dictionary?
  - (VII) Provide a technique for recovery management.
  - (VIII) Edit of a data item in a transaction is done in which mode?
  - (IX) What are the attribute usage values?
  - (X) What do you mean by granularity?
  - (XI) What is the disadvantage of replication?
  - (XII) Who is responsible for ensuring correct execution of a transaction in the presence of failures?

## Group-B (Short Answer Type Question)

Answer any three of the following : [ 5 x 3 = 15 ]

2. What are the advantages and disadvantages of replication? What is auxiliary program? [5]
3. Write down the Dynamic query optimization methods with example. [5]
4. Which components are necessary for building a distributed database? [5]
5. Explain distributed cost model with example. [5]
6. What is DDBMS ? What are the features of DDBMS ? [5]

## Group-C (Long Answer Type Question)

Answer any three of the following : [ 15 x 3 = 45 ]

7. Explain the following in detail: [ 8+4+3 ]
  - i. Query optimization issues in DDBs.
  - ii. World Wide Web Architecture and Protocols.
  - iii. Data warehousing architectures.
8. What is flat transaction and nested transaction? [ 4+6+5 ]
 

Discuss about dirty-read, fuzzy read and phantom.

What is ACID in DDBMS?
9. Briefly describe the various implementations of the process pairs concept. Comment on how process pairs may be useful in implementing a fault tolerant distributed DBMS. [ 15 ]
10. Write down "Basic Timestamp Ordering Scheduler (BTO-SC) Algorithm". [ 8+7 ]
 

Write down "Data Processor (DP) Algorithm" .
11. Discuss different types of search strategies. [ 6+4+5 ]
 

What is search space in distributed query optimization?

Simplify the following query, expressed in SQL, using idempotency rules:

```
SELECT ENO
FROM ASG
WHERE RESP = "Analyst"
AND NOT(PNO="P2" OR DUR=12)
AND PNO != "P2"
AND DUR=12
```