

BT-4/M06

8726

Database Management System

Paper : IT-252

Time : Three Hours]

[Maximum Marks : 75

Note :- Attempt any FIVE questions.

1. (a) What are the responsibilities of a Database Administrator ? 5
(b) Explain the Architecture of a DBMS ? 10
2. (a) How relationships are expressed in Hierarchical data model ? 5
(b) What is the method used for implementing Direct File Organization ? 10
3. (a) Consider the following relation schemas
 $R = (A, B, C)$
 $S = (D, E, F)$
Let $r(R)$ and $s(S)$ be given. Give expression in
(i) QBE
(ii) Tuple calculus
for each of the following queries :-
(a) $\pi_A(r)$
(b) $r \times s$
(c) $\sigma_E = 10(s)$. $(2 \times 3) \times 2 = 12$
(b) Give an example for Aggregate operator of Relation Algebra. 3
4. (a) Explain the BCNF decomposition algorithm. 5
(b) What are the main rules for Normalization ? 10

5. Explain the following operations of relation algebra with a suitable example :-

- (i) Left Join
- (ii) Natural Join
- (iii) Rename
- (iv) Project
- (v) Division.

3×5=15

6. (a) Explain how concurrency is implemented by Timestamp-Based Protocol ? 10

(b) Consider the following schedule:-

T ₁	T ₂
Read (A)	Read (B)
	Write (B)
Write (A)	
Read (B)	Read (A)
	Write (A)

Check whether a serial schedule exists for given schedule. Also support your answer. 5

7. (a) Explain Log Based Recovery technique for databases. 10

(b) What is the role of cursors in ORACLE ? 5

8. Write short notes on :-

- (i) Object Oriented Database Management System
- (ii) Weak Entity Set.

7½×2=15