CS/M.TECH (CSE)/SEM-2/PGCS-203/09
ADVANCED DBMS
SEMESTER – 2

Time : 3 Hours]   [Full Marks : 70

The figures in the margin indicate full marks.

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

Answer Question No. 1 and any *four* from the rest.

1.   Answer any *five* of the following :   5 × 2

   i)   Which index type (dense / sparse) will be suitable for locating a record faster ?

   ii)   What is atomicity property of transaction ?

   iii) What is the function of exclusive lock ?

   iv)   What is horizontal data fragmentation ?

   v)   Define view serializability.

   vi)   What is vertical data fragmentation ?

2.   a)   Explain in brief sparse and dense index.   6

   b)   What do you mean by index sequential file ?   3

   c)   Explain deletion algorithm of B^+ tree using example.   6

3.   a)   Why we need query optimisation ?   5

   b)   Write down the steps involved in processing a query.   5

   c)   How query tree is used to represent a relational algebra expression ? Explain with example.   5

43015 (06/07)

4. a) What are ACID properties of a database transaction ? How are they selected to the concurrency control ?   5 + 5

    b) Every conflict serialisable schedule is also view serialisable, but there are view serialisable schedules that are not conflict serialisable. Is the comment true or false ? Prove your answer.   5

5. a) Teacher (T_name, emp_no, dept)

        Subject (sub_no, sub_title, credit)

        Student (s_name, roll_no, hostel)

        Taught_by (emp_no, sub_no)

        Taken_by (sub_no, roll_no, status, marks)

        Write the SQL query for the following using the above mentioned database schema :   5 × 2

        i)   Find the teacher name who teaches subject 'Advanced DBMS'.

        ii)   Find the name of the students who are studying the subject 'Advanced DBMS'.

        iii) Find out the number of student in each hostel.

        iv)   Find out the name of the students who belong to 'Vivekananda' hostel.

        v)   Find out the subject name which is taught by 'Dr. A. K. Sinha'.

    b) What are spatial and temporal database ?   5

6. a) What are the different types of transaction failure ?   5

    b) Explain in brief log based recovery and shadow paging recovery.   5 + 5

7. a) Explain the features of distributed versus centralised database.   6

    b) Describe a reference architecture for distributed database.   9

8. Write short notes on any *three* of the following :   3 × 5

    a) Data mining

    b) View serializability

    c) Two phase locking protocol

    d) Data warehousing

    e) Object Oriented Database.

═══════

END

 43015 (06/07)