B.Tech. – VIEP – COMPUTER SCIENCE AND ENGINEERING (BTCSVI)

Term-End Examination

June, 2019

00525

BICS-011 : DATABASE MANAGEMENT SYSTEM

Time : 3 hours   *Maximum Marks : 70*

*Note : Attempt any **seven** questions. All questions carry equal marks.*

1. (a)   Explain the architecture of Database Management System (DBMS) with the help of suitable diagram.   5

    (b)   Explain the concept of primary indexing and secondary indexing with suitable example.   5

2. (a)   What do you mean by integrity constraints ? Explain the different types of integrity constraints.   5

    (b)   What is the need of writing a database query in relational algebra ? Discuss the selection and projection operators involved in relational algebra, with the help of suitable example in the discussion.   5

3. (a) Verify the statement "Any relation in BCNF is in 3NF but converse is not true." *5*

   (b) What do you understand by functional dependency ? When is a functional dependency said to be partial functional dependency and when is it said to be trivial ? *5*

4. (a) What is a lock in DBMS ? Explain the concept of shared and exclusive locks with suitable example. *5*

   (b) What do you mean by Database transaction schedule ? How does a serial schedule differ from a serializable schedule ? *5*

5. (a) Discuss the lost update problem of DBMS, with suitable example. *5*

   (b) What is tuple calculus ? How does tuple calculus differ from domain calculus ? *5*

6. Differentiate between the following : $4 \times 2\frac{1}{2} = 10$

   (a) Weak Entities and Strong Entities

   (b) Logical Data Independence and Physical Data Independence

   (c) 3NF and BCNF

   (d) ER Diagram and Enhanced ER Diagram

7. **(a)** Discuss the concept of lossless decomposition with the help of a suitable example. 5

(b) Discuss the concept of dependency preserving decomposition, with the help of suitable example. 5

8. **(a)** Explain the log based recovery scheme with suitable example. 5

(b) What is a View in DBMS ? What are the major advantages of views ? Explain with the help of an example. 5

9. **(a)** What are the concurrency management techniques in DBMS ? Briefly discuss any one technique. 5

(b) Discuss the Dirty Read problem of DBMS with suitable example. 5

10. Write short notes on the following : $4 \times 2\frac{1}{2} = 10$

(a) Deadlock

(b) ACID Properties

(c) Shadow Paging

(d) Relational Calculus