

**B.Tech. - VIEP - COMPUTER SCIENCE AND
ENGINEERING (BTCSVI)**

00436

Term-End Examination

June, 2016

BICS-011 : DATABASE MANAGEMENT SYSTEM

Time : 3 hours

Maximum Marks : 70

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

1. Draw a system architecture of DBMS. Explain each component in detail. 10

2. (a) Give the various advantages and disadvantages of the network model. How is it different from the relational model ? 5
- (b) What is a view ? What are the advantages and disadvantages of views ? 5

3. Construct an ER diagram for a railway reservation system keeping record of the following information :

- (a) Customer
- (b) Train Schedule
- (c) Booking
- (d) Routes
- (e) Enquiry

List all the assumptions you make about the database and mapping constraints.

10

4. (a) Explain the terms integrity constraints and domain constraints with suitable examples. How are they enforced in Oracle ?

5

(b) List the ACID properties. Explain the usefulness of each property.

5

5. (a) Given the relation schema R (A B C D E) and a functional dependency

$$FD = \{ A \rightarrow (B, C)$$

$$B, C \rightarrow A, D$$

$$D \rightarrow E \}.$$

(i) What is the candidate key ?

(ii) What normal form is it in ? Explain.

5

(b) What is normalization ? What is the difference between BCNF and 3NF ? Illustrate with the help of an example.

5

6. (a) Discuss the procedure of deadlock deduction and recovery in transactions with the help of an example. 5
- (b) Explain indexing. What are the different types of indexing? 5

7. Given the relational schema :

flights (flno, from, to, distance, departs)

aircraft (aid, aname, range)

certified (eid, aid)

emp (eid, ename, salary)

Give the queries expressed in relational algebra

for the following queries :

$$4 \times 2 \frac{1}{2} = 10$$

- (a) Find eid of the pilots who are certified on Boeing.
- (b) Find the name of the pilots who are certified on Boeing.
- (c) Find flno of the flights that can be piloted by every pilot whose salary is over ₹ 1,00,000.
- (d) Find eid of employees certified on all the aircraft.
8. Write short notes on any **two** of the following : $2 \times 5 = 10$
- (a) Log Based Recovery
- (b) States of Transaction
- (c) Cascading Schedules
- (d) Database Protection