

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

00283

Term-End Examination

December, 2016

BICS-011 : DATABASE MANAGEMENT SYSTEM

Time : 3 hours

Maximum Marks : 70

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

1. (a) How does Database Management System (DBMS) differ from Filebase System ? Under what condition is it better to use Filebase System in place of DBMS ? 5
- (b) Write short notes on any *two* of the following : 5
 - (i) Centralized Databases
 - (ii) Distributed Databases
 - (iii) Relational Databases
2. (a) List the languages, involved at various levels of ANSI-SPARC 3 level architecture. Categorize the SQL commands involved in languages, identified at respective levels of ANSI-SPARC 3 level architecture for DBMS. 5

- (b) Draw an ER diagram for the statement given below :

“Teachers teach students in an institution, affiliated to a University. The institution has several departments, viz. Engineering, Management, Journalism, etc.”

Use appropriate notations, while drawing the diagram. 5

3. (a) Using the attributes, entities and relations identified in Q. 2(b), prepare the database. Synchronize the prepared database with the ER diagram drawn in Q. 2(b). 5

- (b) Differentiate between the following : 5

- (i) Generalization and Specialization
- (ii) B-Tree and B+ Tree

4. (a) Given the relational schema :

Employee (Emp_code, Emp_name, Profession)

Product (P_code, P_name, P_details)

Job_Function (Job_code, Title)

Assignment (Emp_code, P_code, Job_code)

Write the relational algebra for the following queries : 5

- (i) Find the details of employees working on project code ‘comp353’.
- (ii) Find the employee codes (Emp_code) of the employees who worked on all projects except project code ‘comp353’.

- (b) Write the SQL equivalent of the relational algebra queries asked in Q. 4(a). 5

5. (a) Explain the anomalies that occur, when the relation is not in 2NF. Give suitable example in support of your explanation. 5
- (b) Do you agree with the statement "BCNF is stronger than 3NF". Give suitable arguments in support of your answer. 5
6. (a) Discuss the concept of dependency preserving decomposition, with suitable examples. 5
- (b) Verify whether AB is the candidate key or not, for the relation R (A, B, C, D, E, F, G) with the functional dependency set
 $F = \{A \rightarrow F, B \rightarrow CD, C \rightarrow G, F \rightarrow E\}$. 5
7. (a) Differentiate between serial schedule and serializable schedule. Draw the precedence graph for the transaction schedule given below and identify whether the schedule is serializable or not : 5

(Transaction) T_1	(Transaction) T_2
Read (X) $X = X - N$	
	Read (X) $X = X + M$
Write (X) Read (Y)	
	Write (X)
$Y = Y + N$ Write (Y)	

- (b) Write short notes on any *two* of the following : 5
- (i) 2-Phase Locking
 - (ii) 2-Phase Commit
 - (iii) Tuple Relational Calculus
8. (a) Discuss Optimistic scheduling as a technique for concurrency control. Give suitable examples. 5
- (b) Discuss the Lost update problem with a suitable example. Violation of which property of database transaction contributes to this problem ? 5
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