

**B.TECH. - VIEP - CSE****Term-End Examination****December, 2013****BICS-011 : DATABASE MANAGEMENT SYSTEM***Time : 3 hours**Maximum Marks : 70**Note : Attempt any seven questions.*

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| 1. | (a) Draw and explain with diagram the DBMS Architecture.  | 5  |
|    | (b) Define Indexing. How single level Indexing differ from multi-level Indexing ?   | 5  |
| 2. | Design a generalization - specialization hierarchy for a motor-vehicle sales company. The company sells motorcycles, passenger cars, vans and buses. Justify your placement of attributes at each level of hierarchy. | 10 |
| 3. | (a) What do you mean by Integrity constraints?  | 4  |
|    | (b) Discuss the different relationship Algebra operator. Explain with suitable examples. How data modification can be done using relational algebra operations ?  | 6  |
| 4. | Consider the following Employee database.<br>–employee (employee-name, street, city).<br>–works (emp-name, company name, salary).<br>–company (company-name, city).<br>Write SQL Queries for the following.           |    |
|    | (a) Find the name of all employees who work for "First Bank corporation."   | 3  |
|    | (b) Find all employees in the database who live in the same city as the companies for which they work.  | 4  |

- (c) Delete all tuples in the works relation for employees of "small bank corporation." 3
5. (a) What are the characteristics of Functional Dependencies (FD)? 5
- (b) Is BCMF stronger than BMF? Justify your answer. 5
6. (a) Given 6
- $A \rightarrow BC$
- $E \rightarrow CF$
- $B \rightarrow E$
- $C \rightarrow EF$
- Compute the closure  $X^t$ , of the set of attribute  $\{A,B\}$ , under the above given set of FDs.
- (b) Why are certain functional dependencies are called trivial functional dependencies ? 4
7. (a) List the ACID properties. Explain usefulness of each. 6
- (b) Explain the distinction between the term serial schedule and serializable schedule. 4
8. (a) What is a Lock? Explain shared and exclusive locks with a suitable example. 5
- (b) Explain how does granularity of locking affect performance of con-currency control algorithm ? 5
9. What is a log file? What does it contain ? How can a log file be used for recovery? Describe this with the help of an example that includes all recovery operation. 2+2+2+4=10
10. Write short notes on (any two) : 2x5=10
- (a) Specialization.
- (b) Relational calculus.
- (c) Phantom Problem.