No. of Printed Pages : 2

BICS-011

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

00286 Term-End Examination

June, 2015

BICS-011 : DATABASE MANAGEMENT SYSTEM

Time : 3 hours *Maximum Marks : 70*

Note : *All questions are* ***compulsory.***

1. (a) What are the characteristics of database management system ? Explain in brief. 5

(b) Explain primary indexing, secondary indexing and clustering. 5

2. (a) Differentiate between the following in brief : $2\frac{1}{2} + 2\frac{1}{2} = 5$

(i) Simple vs Composite attribute

(ii) Simple vs Multi-valued attribute

(b) What are the different relational algebra operations ? Explain each. 5

3. (a) What is participation constraint ? Explain total and partial participation constraints. *1+4=5*

(b) What do you mean by normalization ? Explain 1NF, 2NF and BCNF and 3NF. *1+4=5*

4. (a) What are equivalence sets of functional dependencies ? Verify whether the following two sets of functional dependencies are equivalent or not : *1+4=5*

$F = \{A \rightarrow B, B \rightarrow C, AC \rightarrow D\}$

$G = \{A \rightarrow B, B \rightarrow C, A \rightarrow D\}$

(b) What do you mean by schedule ? Explain conflict serializability and view serializability. *1+4=5*

5. (a) What is two-phase locking ? Explain static and dynamic two-phase locking. $2\frac{1}{2} + 2\frac{1}{2} = 5$

(b) Two-phase scheduler is subject to deadlock. Explain with example. *5*

6. (a) What is tuple calculus ? How is it different from domain calculus ? *5*

(b) "Withdraw ₹ 1,000 from a saving account using ATM." How can ACID properties be ensured for the above transaction ? Explain. *5*

OR

Write short notes on any ***two*** of the following : *5+5=10*

(a) Fully Functional Dependency

(b) Derived Attributes

(c) Database Recovery

7. Considering the banking enterprise system, draw the complete ER diagram. *10*