

**DHARMSINH DESAI UNIVERSITY, NADIAD**  
**FACULTY OF TECHNOLOGY**  
**SECOND SESSIONAL EXAMINATION**  
**B.E. INFORMATION TECHNOLOGY**  
**SEMESTER V**  
**SUBJECT: DATABASE MANAGEMENT SYSTEM**

Date: 14/09/2010  
Time: 1:30 to 2:30

Max Marks: 36  
Seat No: - \_\_\_\_\_

- Q1. Answer the following questions:-** [12]
- (1) Explain authorization and views in terms of security. [2]
  - (2) Every FD is a MVD but there exists MVDs that are not FDs. Justify with appropriate example. [2]
  - (3) Armstrong's axioms are \_\_\_\_\_ and \_\_\_\_\_. Give proper justification. [2]
  - (4) What is the purpose of audit trails? [2]
  - (5) What are the reasons for bucket overflow? Also Explain handling of bucket overflow with example. [3]
  - (6) Give the difference between B Tree and B+ Tree. [1]

- Q2. Answer the following questions:-** [12]

- (1) Normalize the following relations upto the highest normal form [6]

**Student**(sno, sname)

**StudMajor**(sno, major, advisor)

**StudCourse**(sno, major, courseno, ctitle, instructname, instructlocn, grade)

The set of functional dependencies are:-

FD={ sno  $\rightarrow$  sname

          courseno  $\rightarrow$  ctitle, instructname

          instructname  $\rightarrow$  instructlocn

          studno, courseno, major  $\rightarrow$  grade

          sno, major  $\rightarrow$  advisor

          advisor  $\rightarrow$  major }

- (2) What is the difference between Primary Index and Secondary Index? Explain with example and also explain Primary Index with example. [6]

**OR**

- (2) Explain any two methods for implementing variable-length Record with appropriate example. [6]

- Q3. Answer the following questions:-** [12]

- (1) Draw the B+ tree for the following search key values [6]

4,9,15,18,8,22,12,20,30,21,35,40,29,33,45,39 where fanout=3.

- (2) Find the canonical cover and candidate key for the given relation [6]

R(A,B,C,D,E,H) and the set of Functional Dependencies are:-

FD= {A  $\rightarrow$  BC, B  $\rightarrow$  CE, A  $\rightarrow$  E, AC  $\rightarrow$  H, D  $\rightarrow$  B}.

**OR**

- Q3. Answer the following questions:-** [12]

- (1) Create an Extendable Hash structure for the following key values: [6]

x={50, 58, 100,106, 158, 250, 310, 355, 397, 444, 596, 778}

Assume that one bucket can store upto 4 keys at a time where the hash function is  $H(x) = x \text{ mod } 15$ .

- (2) Explain the concept of lossless join and dependency preservation. [6]

The relation R (A, B, C, D) and set of FD= {A  $\rightarrow$  B, B  $\rightarrow$  C, C  $\rightarrow$  D, D  $\rightarrow$  A}.

Check whether the decomposition of R into R1 (AB), R2 (BC), and R3 (CD) is dependency preservation or not.