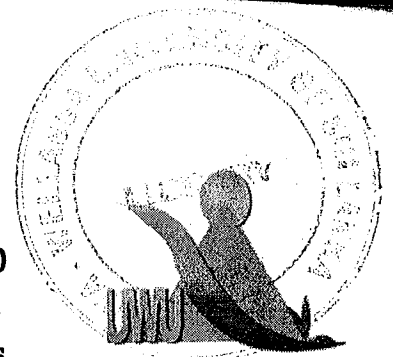


Uva Wellassa University, Sri Lanka
End Semester Examination – Dec/Jan 2010
CST203-2 Database Management Systems
SCT 375-2 Database Management Systems
Time: Two (02) hours



SCT

Total 06 Questions. Answer All questions.

- 01) I. Explain Database Management System (DBMS) with the processes which are facilitated for databases among users and applications by DBMS. (05 marks)
- II. List 5 advantages of DBMS over File Management System. (05 marks)
- III. What are the Integrity Constraints supported by MySQL and what are not supported by MySQL? (10 marks)
- 02) I. List advantages of Indexed file architecture. (03 marks)
- II. Explain two types of Ordered Indices with suitable examples. (04 marks)
- III. Explain the behavior of Primary Index on update and insert data into the file structure. (08 marks)
- 03) I. List advantages of B+ Tree Indexed File Structure over Indexed File Structure. (03 marks)
- II. Create a B+ tree and insert the index values of the following Relation (Bank) which has BNAME as the attribute used to create the index. Show the steps clearly. (12 marks)

BNO	BNAME	CITY
BOC	Bank of Ceylon	Colombo 03
PB	Peoples Bank	Gampaha
HNB	Hatton National Bank	Badulla
DFCC	DFCC Bank	Kandy
DFCCW	DFCC Wardhana Bank	Galle
SeyB	Seylan Bank	Kurunegala
SB	Sampath Bank	Anuradhapura

- 04) I. Draw the Storage Media Hierarchy providing the direction of cost, capacity and speed change. (04 marks)
- II. What is meant by volatility of storage? (02 marks)
- III. Explain three of the following. Each carries three (03) marks.
- Replacement Strategy
 - Pinned Blocks
 - Heap file organization
 - Sequential file organization

- 05) I. What is Normalization? (02 Marks)
- II. List advantages of Normalization. (02 Marks)
- III. Consider the following three relations and the four functional dependencies.

Project (Proj_No, Proj_Name)
 Employee (Emp_No, Emp_Name, Job_Class, Class_Hours)
 Assign (Proj_No, Emp_No, Hours)

FD1 : Proj_No \rightarrow Proj_Name
 FD2 : Emp_No \rightarrow Emp_Name, Job_Class, Class_Hours
 FD3 : Job_Class \rightarrow Class_Hours
 FD4 : Proj_No, Emp_No \rightarrow Hours

Giving reasons, identify the normal form for each of the above three relations.

(05 Marks)

- IV. If the above relations are not in the third normal form, convert them into the third normal form. (06 Marks)
- 06) I. There are two types of Relational Algebra; Special Operations and Set Operations. List special operations and set operations separately. (04 Marks)
- II. Explain two of each type with suitable examples. (08 Marks)
- III. Consider following relations.

Student (StudentId, StudentName, ContactDetails) // StudentId is the key
 Course (CourseNo, DeptName) // CourseNo is the key
 Enroll (StudentID, CourseNo) // <StudentID, CourseNo> is the key

- Write a relational algebra expression to find the IDs of all students who are not enrolled in course No. 145. (04 Marks)
- Write a relational algebra expression to find the IDs of all students who are enrolled in courses in at least two different departments. (04 Marks)