B.Tech. Degree IV Semester Examination April 2018

CS/IT 15-1406 DATABASE MANAGEMENT SYSTEMS
(2015 Scheme)

Time : 3 Hours

Maximum Marks : 60

PART A
(Answer *ALL* questions)

(10 × 2 = 20)

I. (a) What are the features of DBMS?

(b) Identify users of physical level and main operations in this level.

(c) Differentiate spanned and unspanned records organization.

(d) Contrast hashing and indexing.

(e) Examine drawbacks of ER model. Which data model is used for scientific applications?

(f) Consider a table R

PK	2	5	7	9	6
FK	7	2	6	5	6

Here **PK** is primary key and FK is foreign key referencing PK. Identify the tuples to be deleted additionally to preserve referential integrity while deleting tuple (2, 7).

(g) What is candidate key? Write method for identifying candidate key.

(h) Design relational algebra for the SQL statement below:

SELECT PROJECT_LOC FROM PROJECT, DEPARTMENT WHERE
PROJECT. PROJ_DEPID=DEPARTMENT.DEPID AND
DEPARTMENT.DNAME='SALES';

(i) What are the properties of transaction?

(j) Identify the main reasons for update failures in the database system.
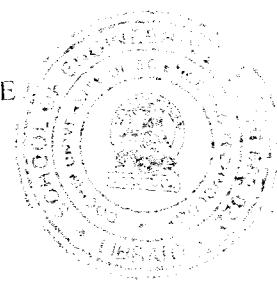
PART B

(4 × 10 = 40)

II. Design ER diagram for on-line shopping system. Entity types are   (10)
SELLER, BUYER, PRODUCT, CART, PURCHASE. Specify the uses of
notations.

OR

III. Using proper examples differentiate
    (a) Cardinality ratio and participation in relation   (5)
    (b) Cardinality ratio and Join operation.   (5)

(P.T.O.)

IV. Suggest any technique to increase the accessing speed of primary memory. (10)
What are main collision resolution techniques?

OR

V. Explain the features of multilevel index. Contrast B and B+ trees. (10)

VI. (a) Define the terms : (6)
    (i) Partial dependency.
    (ii) Transitive dependency.
    (iii) Nontrivial functional dependency.

(b) Write proper example to eliminate above dependencies. (4)

OR

VII. (a) Write a procedure to calculate TOTAL Mark and GRADE of students (4)
from 2 specified marks in 'student' table. Update the student GRADE as
- 'A+' if TOTAL >90
- 'A' if TOTAL >80
- 'B' if TOTAL >60
- 'C' if TOTAL <60.

Display the details Roll Number, Name, Total Mark and Grade after
updating from STUDENT table.

(b) Create 'view' for displaying the details of students who are having (3)
GRADE 'A+'.

(c) Create a 'trigger' to delete the details of employee from EMPLOYEE (3)
table whose department is deleted from the DEPARTMENT table.

VIII. Why concurrency control is needed in database system? Explain any of (10)
the concurrency control techniques.

OR

IX. (a) Explain the various problems in transaction management of a database. (6)

(b) Discuss the features of object oriented databases. (4)

***

```
END WHILE;
select rollno, (mark1+mark2) as total, grade from student;
END$$
DELIMITER ;                                            (4 marks)
```
(b)
```
 CREATE VIEW stud_details AS
(SELECT * FROM student_grade WHERE grade='A')          (3 marks)
```

(c)
```
CREATE TRIGGER `delaction` AFTER DELETE ON `dept`
FOR EACH ROW
BEGIN
   DELETE FROM `employee` WHERE deptid=OLD.deptid;
END                                                    (3 marks)
```

VIII. If Concurrency is uncontrolled problems like lost update, incorrect summary, dirty read may occur. Specifying problems with example- 2 marks for each
For each concurrency technique- 2 marks

OR

IX. (a) Problems related to ACID properties- 1.5 marks for each.
Specify serializability, concurrency control and recovery
(b) Concept of object-oriented database- 1 mark
Features: Encapsulation, Polymorphism and inheritance- 1 mark for each.

Verified by

Hari

HOD,IT, CUCEK

Prepared by,

Sreelakshmy H

Assistant Professor
IT Dept
CUCEK