

- b) Consider a relation & E SOLT (**Roll**, **SCODE**, **MARNS**) holding the marks of each student in different subjects. Write a PL,SQL block to store Roll and total marks in the relation SUMMARY (**ROLL** , **TOTAL**). 7
- c) What is a trigger? Describe its structure. 5
7. a) Describe ACID properties and status of a transaction. 8
- b) Describe the difference between log based recovery in case of deferred and immediate database modification. 5
- c) What is the Concurrency problem? How does time stamp based protocol solve it? 7
8. Write short notes on :
- a) Security feature in DBMS 6
- b) Primary and secondary Indexing. 7
- c) Lossless and dependency preserving decomposition. 7

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BACHELOR OF COMPUTER SC. ENGG. EXAMINATION, 2011
(3rd Year, 1st Semester, Supplementary)

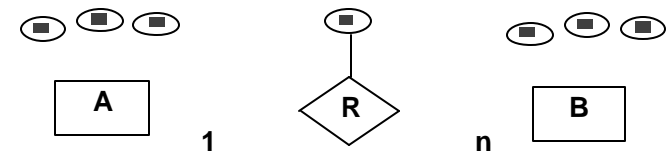
DATABASE MANAGEMENT SYSTEMS

Time : Three hours

Full Marks : 100

Attempt any **five** questions.

1. a) What is DBMS? Write down its advantages over file processing system. 7
- b) Write down the functions of Database Manager and DML precompiler. 7
- c) Define candidate key, foreign key. 6
2. a) What will be the optimal tables for the following ERD :



Also write the necessary SQL statements for creating the tables. Assume, attribute types as you like. 10

- b) What is weak entity set? How will you design the table to implement it? 7
- c) Explain participation constraint. 3

[Turn Over]

(2)

3. a) In relational model, what is a relation? What are intension and extension of a relation? 6
- b) Consider two relations: DEPT (DCODE, DNAME) and EMP (ECODE, ENAME, BASIC, DCODE)
- i) Write down the relational algebra expression to show DCODE and total basic for each department. 3
- ii) Write down the relational Calculus expression to find out the DCODE where at least one person works. 3
- iii) Write down the relational algebra expression to find out the DCODEs in which nobody works. 4
- c) Compare cartesian product and natural join. 4
4. a) What is functional dependancy? Specify Armstrong's axioms. 6
- b) Consider a schema R (A, B, C, D) find out the candidate key (s) considering the following F. D. s:

$A \rightarrow B$

$B \rightarrow C$ 3

- c) Consider a schema R (A, B, C, D, E, F). AB is the only candidate key. All attributes are atomic and single valued. Assume the following F. D. s :

$A \rightarrow C, D, F$

(3)

- Normalize the schema upto 3wf. Explain the steps. Indicate primary and foreign key (if any). 6
- d) Explain, why do we normalize a relation. 5
5. Consider two tables : DEPT (**DCODE**, DNAME) and EMP (**ECODE**, ENAME, DCODE, BASIC, GRADE, DT-JOIN)
- Write down the SQL statements for the following :
- a) Find out DCODE and total Basic for each department. 3
- b) Find out the name of the departments where nobody works. 3
- c) Find out the numbers of employees in each department (show DCODE and number of employers) who have joined in the year 2011. 4
- d) Delete 'A' grade employee records working in the department named as 'ABC'. 4
- e) Find out number of departments where atleast one person works. 3
- f) Increase the basic pay of 'D' grade employers by Rs. 500. 3
6. a) Two relations are sorted on joining attribute. Write an optimal strategy for joining. Also, specify number of block accesses required. 8

[Turn Over]