Birla Institute of Technology & Science-Pilani
Hyderabad Campus
2nd semester 2016-17
Database Systems (CSF212) Test-1(Regular)

Dt: 28.02.2017 AN Weightage: 20% Time: 60 Mins Type: Close Book

Instructions: (i) No additional sheets are supplied. Hence use the space in main booklet accordingly. (ii) For all answers, concept related content, neatness and the presentation carry marks as applicable.

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1. With a suitable simple example brief on *Logical Data Independence* and how it is achieved through SQL views? [3]

2. Brief on the purpose of the *Logical Database Design* step in database Development process. [3]

3. Give the list of operators which form the *complete set of relational operators* in Relational Algebra. Show how join-operation can be performed with operators in the complete set only. [3]

4. Define and brief on *Cardinality* and *Degree* of a relationship in ER modeling. [3]

5. Brief on the basic concept and the need for *Object Relational Data model*? [3]

6. Brief on the advantages of *foreign key* concept in Relational data model. [3]
(you may give suitable simple examples)

7. Assume that we need to capture the data about Banking system described below.

i) We capture details of banks; like- name (unique) (Ex. SBI, Canara bank etc.) , category (private or public sector) , headquarters (city) , start year, and CEO.

ii) A bank (like SBI, Canara Bank, Union bank etc.), will have branches identified by branch code. Branch codes are unique within a bank, but may repeat for different banks.

(Ex. SBI and Union Bank both may have branches with code '1126'. But no bank can have two branches with same code.

iii) Each branch will have street, city, manager (name, Designation, contact as sub-

Components), turnover as other attributes apart from branch code.

iv) Banks have accounts with unique account number (with in the bank) and customer name, start_date, cust_address, cust_contact (multiple contacts possible), type, balance as other attributes. Accounts are attached to banks, but not to branches. There is no concept of joint account. Every Bank will have at least 1000 accounts. Different banks can have accounts with same account number. But no bank can have two accounts with same account number. (Ex. Acct# 11267 can be there in SBI and Corporation bank as well.). One account is associated with only one bank .

Now, draw the **ER** diagram for the above description. Indicate- cardinality, keys, attributes, min-max, and participation constraints for entity-types involved in the relationships. If found missing, assume necessary data. [6]

8. Look at the following Database schema. [4X4=16]

Student(<u>sid</u>, sname, sbranch) // student details
Company(<u>cid</u>, cname, clocation) // company details
Placement(<u>sid</u>, <u>cid</u>, salary) // student-placement offer details

Now, write Relational Algebra and SQL (both) queries for the following.

(i) Get the *sid* and the *sname* for those students who have not been placed by any company located in Delhi.

(ii) Get the *cid* and *cname* for those companies who have selected all students from EEE and CIVIL branch, for placement.

Note: No need to rename attributes in results. Do not define VIEWS. Do not use Outer joins.

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