

JAYPEE UNIVERSITY OF INFORMATRION TECHNOLOGY, WAKNAGHAT

TEST -1 EXAMINATION- 2015

B.Tech III Semester

COURSE CODE: 10B11CI312

MAX. MARKS: 15

COURSE NAME: Database Systems

COURSE CREDITS: 4

MAX. TIME: 1 HR

Note: All questions are compulsory. Carrying of mobile phone during examinations will be treated as case of unfair means. Make suitable assumption if any.

Section-A (5 X 1 = 5)

- Q1. Why would you choose a database system instead of simply storing data in operating system files?
 Q2. How you differentiate between Physical and Logical data independence? Why it is important?
 Q3. What is a foreign key constraint? Why are such constraints important? What is referential integrity?
 Q4. Explain disjoint and totality constraints on specialization with example.
 Explain total and partial constraint on relationship types with example.

Section-B (2.5 X 2 = 5)

Assume the following relations:

BOOKS (DocId, Title, Publisher, Year)

STUDENTS (StId, StName, Major, Age)

AUTHORS (AName, Address)

borrows (DocId, StId, Date)

has-written (DocId, AName)

describes (DocId, Keyword)

- List the name of students who are older than 30 and who are not studying CS
- List all books published by McGraw-Hill before 1990
- List all information about students whose major is CS.
- List the names of all students who have borrowed a book and who are CS majors.
- List the title of books written by the author 'Ullman'

Q1. Write relational algebra expression for above queries.

Q2. Write tuple relational calculus expression for above queries.

Section-C (2.5 X 2 = 5)

The organizers of the EXAM 2015 international multi-conference need to keep track of a large collection of workshops associated with the event. Initial requirements analysis brings out the following information about what needs to be recorded.

- Each workshop has a name, and happens on a particular date or dates, as some workshops last more than one day.
- There are several participants, each of which may sign up to one or more workshops.
- For each participant, it is important to record their name, email address, and the workshops which they wish to attend.
- There are a number of meeting rooms at the conference venue, each of a fixed capacity. Meetings rooms are identified by a floor and room number.
- Every workshop needs an allocated meeting room; where a workshop lasts for two days, it will use the same room on both days.

Q1. Draw an Entity-Relationship Diagram suitable for representing above information, in particular the connections between participants, workshops, rooms, and dates.

Q2. Translate the ER Diagram into Relational Model and draw relational schema diagram for above information.