Name: _____ ID: _____ Section: | L2 | L3 |

Instructions: Answer these questions as clearly as possible.

Q. 1: [2 marks] In database terminology, what is the difference between a **query** and a **transaction**?

In database terminology, a query is typically used to retrieve (fetch) data from the database.
A transaction may be used to retrieve and/or write (update) some data into the database.

Q. 2: [2 + 1 = 3 marks] Given the following tables in a database, answer the questions stated:

STUDENT

Name	Student_number	Class	Major
Smith	17	1	CS
Brown	8	2	CS

SECTION

Section_identifier	Course_number	Semester	Year	Instructor
85	MATH2410	Fall	07	King
92	CS1310	Fall	07	Anderson
102	CS3320	Spring	08	Knuth
112	MATH2410	Fall	08	Chang
119	CS1310	Fall	08	Anderson
135	CS3380	Fall	08	Stone

GRADE_REPORT

Student_number	Section_identifier	Grade
17	112	B
17	119	C
8	85	A
8	92	A
8	102	B
8	135	A

PREREQUISITE

Course_number	Prerequisite_number
CS3380	CS3320
CS3380	MATH2410
CS3320	CS1310

COURSE

Course_name	Course_number	Credit_hours	Department
Intro to Computer Science	CS1310	4	CS
Data Structures	CS3320	4	CS
Discrete Mathematics	MATH2410	3	MATH
Database	CS3380	3	CS

(a) How many 3 (or 4)-credit courses are there in which students have received an 'A' grade?
For 3-credit courses, the answer is “2” courses. For 4-credit courses, the answer is “1” course.
(b) How many tables did you need to access in order to to answer the above query?
3 tables: COURSE, SECTION, GRADE_REPORT

Q. 3: [2 marks] What is **meta-data** in database terminology? Explain with an example.

Meta-data is descriptive information about the data that is stored in a database. This may
be stored in the form of a dictionary or a catalog. Typical examples of metadata are: length
of a name datatype, number of columns (attributes) in a table (relation), etc.

Q. 4: [3 marks] Design your own relational schema (table) for a particular scenario with attributes identifying the primary key, a candidate key and a superkey. In particular, all of your keys must be different (so, do not use the same primary key, candidate key and superkey in the answer space below). [Describe and design your relational schema in the space below]

Consider the following schema for a book in a library:
Book(Library_Book_ID, ISBN, Title, Subject Area, Date of Publishing)
The super key can be the entire set of attributes, i.e.,
Library_Book_ID, ISBN, Title, Subject Area, Date of Publishing
A candidate key is: ISBN
A primary key is: Library_Book_ID

Primary key: **Library_Book_ID** A Candidate key: Library_Book_ID, **ISBN** A Superkey: **Library_Book_ID, ISBN, Title, Subject Area, Date of Publishing**	Write your ID here again: _____ TOTAL: