## PART A

Q.1. Answer the following questions.

a) Consider the following relational schema and write SQL to answer the following questions (any EIGHT).  8X2.5=20

classroom(building, room_number, capacity)
department(dept_name, building, budget)
course(course_id, title, dept_name, credits)
instructor(ID, name, dept_name, salary)
section(course_id, sec_id, semester, year, building, room_number, time_slot_id)
teaches(ID, course_id, sec_id, semester, year)
student(ID, name, dept_name, tot_cred)
takes(ID, course_id, sec_id, semester, year, grade)
advisor(s_ID, i_ID)
time_slot(time_slot_id, day, start_time, end_time)
prereq(course_id, prereq_id)

i. Find the names of all departments with instructor, and remove duplicates.

ii. Find the course ID, semester, year and title of each course offered by the Comp. Sci. department.

iii. Find the names of all instructors who have a higher salary than some instuctor in 'Comp. Sci'.

iv. Find the names of all instructors with salary between $90,000 and $100,000.

v. Find the names of all departments whose building name includes the substring 'Watson'.

vi. Find the average salary in each department.

vii. Update all instructors with salary over $100,000 receive a 3 percent raise, whereas all others receive a 5 percent raise.

viii. Insert a course CS-437 in the Computer Science department with title "Database Systems", and 4 credit hours.

ix. Delete all tuples in the instructor relation pertaining to instructors in the Finance department.

x. Delete all tuples in the *instructor* relation for those instructors associated with a department located in the Watson building.

xi. Find all departments where the total salary is greater than the average of the total salary at all departments.

b) What is Data Abstraction? Why it is needed? Briefly describe its different levels.  5

Q.2. Answer of the following questions (any FIVE).  5X5=

a. List five significant differences between a file-processing system and a DBMS.

b. Create a store procedure to return all instructor of any department where department name is input parameter. (consider the relational schema shown in Q.1(a))