|                           | Uneah                      |
|---------------------------|----------------------------|
| Name:                     | (4)                        |
| Roll No.:                 | One of Excelor and Excelor |
| Invigilator's Signature : |                            |

# COMPUTER APPLICATION IN PHARMACEUTICAL TECHNOLOGY AND CLINICAL PHARMACY

Time Allotted: 3 Hours Full Marks: 70

The figures in the margin indicate full marks.

Candidates are required to give their answers in their own words as far as practicable.

#### **GROUP - A**

#### ( Multiple Choice Type Questions )

- 1. Choose the correct alternatives for any ten of the following :  $10 \times 1 = 10$ 
  - i) Dendrimers are used in
    - a) solid phase synthesis
    - b) solution phase synthesis
    - c) particle size determination
    - d) acid base titration.
  - ii) Indicator variable is used in
    - a) HQSAR study b) Free Wilson Approach
    - c) 6D QSAR study d) 3D QSAR study.

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- iii) To sort records we use
  - a) ORDER BY clause
  - b) HAVING clause
  - c) GROUP clause
  - d) none of these.
- iv) How do you communicate with RDBMS?
  - a) Relational algebra
- b) Relational calculus

c) SQL

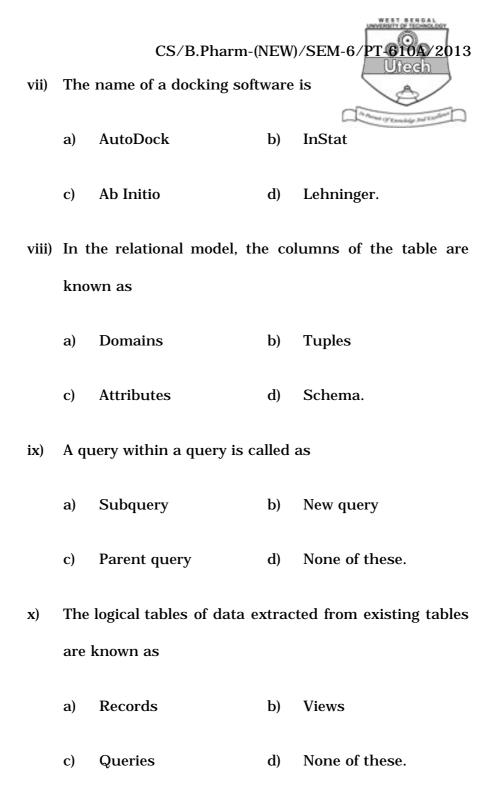
- d) None of these.
- v) A dashed oval in an ER diagram represents which attribute?
  - a) Derived
- b) Composite

c) Stored

- d) Multivalued.
- vi) A software using molecular dynamic approach is
  - a) Scrodinger
- b) AMBER

c) SYBIL

d) AutoDock.



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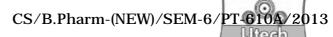
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- xi) Language for accessing and manipulating the data is known as
  - a) DDL
  - b) DML
  - c) SQL
  - d) None of these.
- xii) Example of a relational DBMS is
  - a) MS-Office
  - b) UNIX
  - c) Windows-7
  - d) Oracle.

## **GROUP - B** ( Short Answer Type Questions )

Answer any *three* of the following.

- $3 \times 5 = 15$
- 2. Write a short note on 3 tier architecture.
- 3. Mathematically prove that the value of the correlation coefficient always lies within -1 to +1.



4. Assume a relation

Student {std\_id, roll, name, address, city}

Find out all super keys. Which of them are candidate keys?

- 5. Define Cartesian product of two sets. Find the Cartesian product of two sets  $A = \{ 2, 5, 6, 10, 15 \}$  and  $B\{3, 5, 7, 9, 13 \}$ .
- 6. Enlist the various advantages of combinatorial synthesis over conventional synthesis.

### **GROUP - C** ( Long Answer Type Questions )

Answer any *three* of the following.  $3 \times 15 = 45$ 

- 7. What is normalization ? State 1NF, 2NF, 3NF and BCNF with suitable examples.  $3 + (4 \times 3)$
- 8. Write a brief note on Hansch analysis. Why is non-linearity observed while plotting lipophillicity against biological activity? What is Ab initio method? What is Meyer-overton Hypothesis? Write a brief note on solid phase synthesis.

$$5 + 2 + 2 + 2 + 4$$

9. What are the advantages of DBMS over file system? What is DBMS? What is the difference between data and information? Define a) primary key b) super key. What are Schema and instances?

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10. For the given Table "employee":

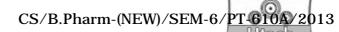
| Emp_id | Name    | Address | Salary |  |  |
|--------|---------|---------|--------|--|--|
| E101   | SUJOY   | DELHI   | 50000  |  |  |
| E102   | BINITA  | KOLKATA | 60000  |  |  |
| E103   | SHYAMAL | DELHI   | 30000  |  |  |
| E108   | ATIN    | MUMBAI  | 40000  |  |  |
| E109   | SUBRATA | KOLKATA | 60000  |  |  |

Write the following SQL queries:

- a) Show all employees with address "DELHI"
- b) Show all employees with salary greter than 30000 and less than 60000.
- c) Show the average salary of employees with address "DELHI".
- d) Show addresses of all employees with name starting with  ${}^{\prime}K^{\prime}.$

 $5 \times 3$ 

e) Show the total number of employees.



11. Dissolution profile of aceclofenac sustained release tablet is given as % released versus time in the following table :

| Time in hour           | 1 | 2 | 3  | 4  | 5  | 6  | 7  | 8  |
|------------------------|---|---|----|----|----|----|----|----|
| % Aceclofenac released | 5 | 8 | 12 | 18 | 26 | 35 | 48 | 62 |

- a) Calculate the linear regression equation of Y (% Aceclofenac released) on X (time in hour).
- b) Calculate the correlation coefficient between *X* and *Y*.

8 + 7

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