



Name :

Roll No. :

Invigilator's Signature :

CS/B.PHARM(NEW)/SEM-6/PT-610A/2011

2011

**COMPUTER APPLICATION IN PHARMACEUTICAL
TECHNOLOGY & 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 of the following :

10 × 1 = 10

i) The statistical software package of the following is

- a) Adobe Photoshop b) SPSS
c) Auto CAD d) MS Word.

ii) Geometric mean of x_1, x_2, \dots, x_n is

- a) nx b) $\frac{\sum x}{n}$
c) $\frac{\log x}{n}$ d) $\left(\prod_{i=1}^n x_i \right)^{1/n}$.

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- iii) The median value of the dataset (4, 2, 3, 5, 2, 6, 8, 6)
is

a) 2 b) 4
c) 4.5 d) 5.

iv) The probability that a normal patient has a cholesterol
value below 170 ($\mu = 205$, $\sigma = 35$) is

a) 0.0228 b) 0.1587
c) 0.5000 d) 0.8413.

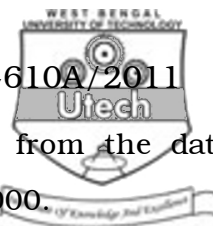
v) An experiment is producing only two results : success
and failure with probability p and q respectively. Which
type of distribution it is expected to match ?

a) Normal distribution
b) Binomial distribution
c) Chi-square distribution
d) t -distribution.

vi) Calculate the z -statistic of the value 40 when the
mean = 56 and standard deviation = 8.

a) - 16 b) 8
c) 2 d) - 2.

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- vii) The correlation coefficient, r obtained from the data available for two variables x and y is 1.000.

Then which one of the following inferences will be correct ?

- a) Half of the points will be on the regression line
 - b) All the points will be on the regression line
 - c) None of the points will be on the regression line
 - d) Correlation coefficient, r can never have a value of 1.
- viii) In Hammet equation σ is used as a descriptor of
- a) electronic property of the molecule
 - b) steric effect of a molecule on the biological activity
 - c) lipophilicity of the molecule
 - d) hydrophobicity of the molecule.
- ix) What is 'tuple' ?
- a) Another name for a table in an RDMMS.
 - b) Another name for the key linking different tables in a database
 - c) A row or record in a database table
 - d) An attribute attached to a record.



x) Which of the following is not a characteristic of an RDBMS ?

- a) Data are organized in a series of two-dimensional tables each of which contains records for one entity.
- b) It cannot use SQL
- c) Tables are linked by common data known as keys
- d) Queries are possible on individual or groups of tables.

GROUP – B

(**Short Answer Type Questions**)

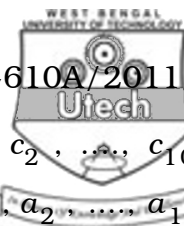
Answer any *three* of the following.

3 × 5 = 15

2. Calculate the variance of the following data :

5

<i>Range</i>	<i>Frequency</i>
14.0 - 14.4	1
14.5 - 14.9	3
15.0 - 15.4	2
15.5 - 15.9	4
16.0 - 16.4	5
16.5 - 16.9	6
17.0 - 17.4	12
17.5 - 17.9	6
18.0 - 18.4	5
18.5 - 18.9	3
19.0 - 19.4	2
19.5 - 19.9	1



3. Ten standard solutions of a pure drug $[c_1, c_2, \dots, c_{10}]$ are prepared and the absorbance values $[a_1, a_2, \dots, a_{10}]$ are taken in a UV-Spectrophotometer. The absorbance values corresponding to the standard concentrations are plotted. Write the steps involved in determining the slope (B) and intercept (A) of the straight line $[Conc = A \times Abs + B]$ obtained by Linear Regression Analysis by using Microsoft Excel software. 5
4. Explain Generalization, Specialization and Aggregation. 5
5. For the given table write down the SQL commands stated below :

Table name : student

Regno	Name	Combination	Total_marks
1004	Abir Roy	PCB	280
1002	Suvendu Das	PCM	254
1009	Surajit Banerjee	PCM	290
1007	Bimal Manna	PCB	254

- i) Find out the Regno and Name of the students who get more than 260 marks.
- ii) Find out the total number of students who have the combination PCM. $2 \times 2 \frac{1}{2}$
6. What are left, right and full outer join ? Explain with examples. 5

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GROUP – C

(Long Answer Type Questions)



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

7. What do you mean by computer aided drug design ? Name two softwares, which are used for computer aided drug design. Discuss how Hansch Analysis is carried out to predict biological action of a drug. $5 + 2 + 8$
8. Explain with example the domain constraint and referential integrity of a DBMS. How the database is normalized in an RDMBS ? $6 + 9$
9. a) Explain the various types of 2D and 3D descriptors used in QSAR.
- b) Write a brief account on Principal Component Regression Analysis (PCRA) in QSAR. $10 + 5$
10. a) Write details about the Internal and external validation procedures involved in QSAR analysis. 10
- b) Write a short account on Partial Least Square (PLS) analysis. 5



11. The percentage of lisinopril released from its tablet dosage form at different time intervals are given in the following table.

<i>Time in minutes (x)</i>	5	10	15	20	25	30
<i>Percentage of lisinopril released (y)</i>	10.5	21.2	32.8	45.0	58.2	63.3

- i) Determine the linear regression equation of percentage of lisinopril released (y) on time in minutes (x) at least up to 4 decimals. $7 \frac{1}{2}$
- ii) Determine the correlation coefficient between time in minutes and percentage of lisinopril released at least up to 4 decimals. $7 \frac{1}{2}$
