Name : .....

Roll No. : .....

Invigilator's Signature : .....

CS/B.Pharm/SEM-7/PT-709A/2009-10

2009

COMPUTER APPLICATION IN PHARMACEUTICAL TECHNOLOGY AND IN CLINICAL PHARMACY (ELECTIVE- II)

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) Geometric mean of $x_1, x_2, x_3, ..., x_n$ is

a) nx b) $\frac{\Sigma x}{n}$

c) $\frac{\log x}{n}$ d) $\frac{\Sigma \log x}{n}$.

ii) The mode of the data set (4, 2, 3, 5, 2, 2, 4, 2, 6, 8, 6) is

a) 2 b) 4

c) 4·5 d) 5.

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iii) Standard deviation of small number of data ($n < 20$) can be calculated by using which of the following formula ?

a) $\frac{\Sigma (x - \bar{x})^2}{n}$ b) $\sqrt{\frac{\Sigma (x - \bar{x})^2}{n}}$

c) $\frac{\Sigma (x - \bar{x})^2}{n - 1}$ d) $\sqrt{\frac{\Sigma (x - \bar{x})^2}{n - 1}}$.

iv) 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 the following distribution ?

a) Normal distribution

b) Binomial distribution

c) Chi-square distribution

d) t-distribution.

v) Calculate the Z-statistic of the value 40 when the mean = 56 and standard deviation = 8

a) – 16 b) 8

c) 2 d) – 2.

vi) 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.

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vii) The following data gives weight of tablets in mg.

Weight of tablets (in mg.) :

25, 28, 25, 30, 29, 24, 23, 27, 28, 25

The average weight of the tablet is

a) 26·4 b) 24·6

c) 26·04 d) none of these.

viii) Rejective of H_0 when it is true. The decision is

a) wrong, type I error

b) wrong, type II error

c) correct

d) none of these.

ix) $b_{xy} = \frac{5}{6}$ and $b_{yx} = \frac{8}{15}$. The coefficient of correlation (r)

a) $\frac{4}{9}$ b) $+\frac{2}{3}$

c) $-\frac{2}{3}$ d) none of these.

x) If a null hypothesis is accepted at 0·05 level of significance then this decision is

a) 5% correct b) 0·05% correct

c) 0·95% correct d) 95% correct.

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xi) Which one of the following statements is not true for the correlation coefficient r_{xy} of two variable x and y ?

a) r_{xy} has no unit

b) The maximum value of r_{xy} is 1

c) r_{xy} must be positive

d) The minimum value of r_{xy} is – 1.

GROUP – B

(Short Answer Type Questions)

Answer any *three* of the following. 3 × 5 = 15

2. Write the steps involved in performing one-way ANOVA.

3. 10 tablets are taken at random from a batch of tablets. Hardness values are mentioned in the following table. Report the mean with 95% confidence limit $t_{(0{\cdot}05,9)} = 2{\cdot}262$

Hardness (kg)	4·2	6·5	3·5	6·1	5·2
	5·6	3·8	4·9	4·5	5·0

4. Write a short note on Computer Aided Drug Design.

5. Write down the steps for computing 'Descriptive Statistics' tool in MS Excel. State the name of the parameters that measures in the 'Descriptive Statistics' tool in MS Excel.

3 + 2

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6. From an analysis of monthly wages paid to workers in two pharmaceutical organization *A* and *B*, the following results are obtained

	A	***B***
No. of workers	550	600
Average monthly wages	60	85
Variance	100	144

Which pharmaceutical organisation has greater variability in individual wages ?

GROUP – C

(Long Answer Type Questions)

Answer any *three* of the following. 3 × 15 = 45

7. Name the factors to be considered while designing clinical trials. Write a note on cross-over design with an example. 7 + 8

8. Blood pressure of 10 normal persons and 10 drug-treated persons are recorded. The records are stated in the following table :

Expt. No.	***Blood pressure in mm Hg***	
	Normal (Control)	***Drug-treated (Ex-perimental)***
1	225	210
2	220	215
3	230	205
4	220	220
5	240	230
6	215	225
7	235	210
8	220	230
9	240	225
10	225	220

a) Calculate the *t*-value

b) Calculate the degrees of freedom

c) Give inference whether the drug has significant effect in reducing the blood pressure.

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t-Table : The *t*-values are given at different degrees of freedom and at different *P*-values :

	P = 0·05	*P* = 0·02
df = 9	2·262	2·821
df = 18	2·101	2·552
df = 19	2·093	2·539

10 + 2 + 3

9. Write an entry program in 'FOX-PRO' for drug-drug interaction with a file name DDI.dbf mentioning :

i) Drug's name

ii) Interacting drug's name

iii) Resulted Interaction

iv) Probable cause of Interaction

v) Prevention of Interaction.

Display the field drug's name and interacting drug's name with the help of 'List' command.

Create a search program for retrieving data from DDI.*dbf* .

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10. a) Define Correlation coefficient.

b) Explain the test of singificance of Correlation coefficient.

c) Power compacts were prepared at different compaction pressures and hardness of the resulting compacts was determined as follow :

Obs.	1	2	3	4	5	6	7	8
Pressure (tons)	0·25	0·75	1·0	1·5	2·0	2·5	3·0	4·0
Hardness (kg)	1·0	1·3	1·9	2·6	2·8	3·3	4·2	5·3

i) Calculate Correlation coefficient

ii) Test the Correlation coefficient is signaficant or not at 5% level of significance. *t*-table value of 5% significance and with 6 *d.f.* is 2·45.

2 + 4 + 5 + 4

11. a) What are the various advantages of Combinatorial chemistry ?

b) Write in brief about any *four* of the following :

i) Photo lithography

ii) Safety catch linker

iii) Taft's steric factor

iv) Automated parallel synthesis

v) Houghton's tea bag procedure

vi) Linkers used in combinatorial chemistry

vii) 3D QSAR. 3 + (4 × 3)

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