*Name* : .....

*Roll No.* : .....

*Invigilator's Signature* : .....

**CS/B.PHARM (OLD)/SEM-7/PT-709C/2011-12**

**2011**

# COMPUTER APPLICATION IN PHARMACEUTICAL TECHNOLOGY IN 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) AUC can be calculated by the formula

   a) FD/VKe b) FV/DKe

   c) FVDKe d) VDKe/F.

   ii) The systolic B.P. of 10000 patients is normal with mean 120 and S.D. 20. The number of patients whose systolic B.P. less than 100 is

   a) 350 b) 300

   c) 200 d) 100.

iii) The equality of several population means can be tested by comparing the sample variance using

a) Binomial distribution

b) Chi-square distribution

c) F-distribution

d) Normal distribution.

iv) Mode of a variable is the value of the variable

a) having mid-value

b) square of standard deviation

c) average

d) having the highest frequency.

v) Post-marketing surveillance is done in ..... of clinical trials.

a) Phase I b) Phase II

c) Phase III d) Phase IV.

vi) The Geometric mean of 2, 9, 12 is

a) 6 b) 7

c) 8 d) 9.

vii) Standard Error of mean is

a) $S/N$ b) $S/\sqrt{N}$

c) $S^2 / N$ d) $S/N^2$.

viii) The median of the numbers :

94, 33, 86, 68, 32, 80, 48, 70

is

a) 66 b) 67

c) 68 d) 69.

ix) Example of database software is

a) MS-access b) MS-excel

c) MS-word d) None of these

x) The statistical software package is

a) Adobe photoshop

b) SPSS

c) Auto CAD

d) MS-Word.

xi) Pre-clinical triaals is done on

a) Human healthy volunteers

b) Small population patients

c) Large population patients

d) On animal.

xii) The relation between Arithmetic mean ( $A$ ), Geometric mean ( $G$ ) and Harmonic mean ( $H$ ) is

a) $A = GH$

b) $A = G/H$

c) $A = H/G$

d) $A = \log G/H$.

## GROUP – B

### ( Short Answer Type Questions )

Answer any *three* of the following. $3 \times 5 = 15$

2. The overall percentage of death in a certain hospital is 40. What is the probability that out of 6 patients at least 4 will survive ?

3. Write the significance of one way ANOVA statistics. What are the assumptions in the one way ANOVA analysis ? 3 + 2

4. For the following blood pressure measurements :

   100, 98, 101, 94, 104, 102, 108, 108,

   calculate

   a) the mean

   b) the variance

   c) the standard deviation

   d) the coefficient of variation

   e) the median.

5. List three experiments whose outcomes will result in each of the following kinds of variables :

   a) Continuous variable

   b) Discrete variable.

6. A pharmaceutical company wants to estimate the mean life of a particular drug under typical weather conditions. Following results were obtained from a random sample of 64 bottles of the drug.

   Sample mean : 20 months

   Population standard deviation : 3 months

   Sample size : 64

   Find the interval estimates with a confidence level of 90%, 95% and 99%.


## GROUP – C

**( Long Answer Type Questions )**

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

7. What should be the duration of washout period between any two bioavailability studies in the same subject ? Why ? Lay out a latin square cross-over diagram for bioequivalence study on three formulations *A*, *B* and *C* in six volunteers.

5 + 10

8. What do you mean by computer aided drug design ? Discuss the QSAR in computer aided drug design.

9. Discuss the significance of clinical trials in new drug development.

10. In an infantile epidemic, 500 persons contracted the disease, 200 receive no serum treatment and of these 75 became paralyzed. Of those who did receive serum treatment 65 became paralyzed. Was the serum treatment effective ? $\chi^2_{0\cdot01}$ = 6·64 for 1 d.f.

11. Nine patients to whom a certain drug was administered, registered the following rise in blood pressure :

    3, 7, 4, – 1, – 3, 6, – 4, 1, 5.

    Test the hypotheses that the drug does not rise the blood pressure at 10% level of significance. Assume that the sample from a normal population and $P$ ( $t$ > 1·397 ) = 0·10 for 8 degrees of freedom.

12. Tablets are weighed and assayed with the following results :

| ***Weight*** | ***Assay*** | ***Weight*** | ***Assay*** |
|---|---|---|---|
| 200 | 10·0 | 198 | 9·9 |
| 205 | 10·1 | 200 | 10·0 |
| 203 | 10·0 | 190 | 9·6 |
| 201 | 10·1 | 205 | 10·2 |
| 195 | 9·9 | 207 | 10·2 |
| 203 | 10·1 | 210 | 10·3 |

a) Calculate the correlation coefficient

b) Test the correlation coefficient versus 0 ( 5% level ).

$7\frac{1}{2} + 7\frac{1}{2}$