

Name :

Roll No. :

Invigilator's Signature :

CS/B.Pharm/SEM-7/PT-709C/2010-11

2010-11

**COMPUTER APPLICATION IN PHARMACEUTICAL
TECHNOLOGY AND 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 × 1 = 10

i) The geometric mean of 2, 3, 8, 27 is

- a) 3 b) 6
c) 8 d) 27.

ii) The median value of the data set (14, 12, 13, 15, 12, 16, 18, 16) is

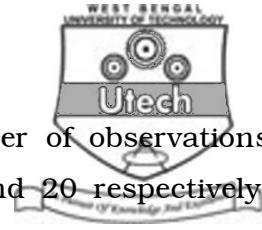
- a) 12 b) 14
c) 14.5 d) 15.

iii) Standard error of mean is

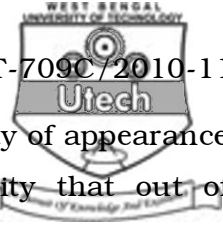
- a) $\frac{\sigma}{\sqrt{n}}$ b) $\frac{\sigma}{\sqrt{n-1}}$
c) $\frac{\sigma}{n}$ d) $\frac{\sigma}{n-1}$.

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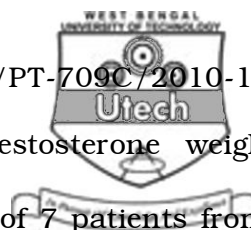
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- iv) There are two groups having number of observations 110 and 90 with mean value 25 and 20 respectively. Their composite mean is
- a) 21.75 b) 22.75
c) 23.75 d) 24.75.
- v) In a binomial distribution having “n” number of random variables, variance is
- a) np/q b) npq
c) nq/p d) pq/n .
- vi) For a set of “n” pairs of observations $(x_1, y_1), (x_2, y_2), (x_3, y_3), \dots$ and (x_n, y_n) relating to two variables x and y correlation coefficient can be calculated by using the formula
- a) $\text{cov}(x, y)/\sigma_x \sigma_y$ b) $\sigma_x \sigma_y/\text{cov}(x, y)$
c) $\sigma_x \text{cov}(x, y)/\sigma_y$ d) $\sigma_y \text{cov}(x, y)/\sigma_x$,
- where σ_x and σ_y are the standard deviations of x & y series and $\text{cov}(x, y)$ is the covariance between x and y series.
- vii) When result of ANOVA concludes that population means are not equal, then to test the difference which of the following statistics should be calculated ?
- a) Anova difference b) Chi-square difference
c) Critical difference d) Mean difference.



- viii) A coin is tossed 10 times. The probability of appearance of head is 0.5. What is the probability that out of 10 trials all the time head will appear ?
- a) 10×0.5^{10} b) 0.5
- c) 0.5^{10} d) 1.
- ix) The correlation co-efficient, r obtained from the data available for two variables x and y is 1.000. 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.
- x) Variance of 1, 4, 8, 3, 2 is
- a) 2.4 b) 5.74
- c) 2.7 d) 7.3.
- xi) During clinical trial inter-subject variability and intra – subject variability can be minimized by employing
- a) Latin square cross-over design
- b) Parallel design
- c) Both (a) and (b)
- d) Block design.



5. A group of 5 patients treated with testosterone weigh 42, 39, 48, 60 & 41 kg. A second group of 7 patients from the same hospital treated with estradiol weigh 38, 42, 56, 64, 68, 69 & 62 kg. Do you agree with the claim that estradiol increases the weight significantly ? The t values at 5% level of significance are given below for different degrees of freedom.

Degrees of freedom	11	10	7
t -values	2.201	2.228	2.365

6. Explain the term 'hypothesis testing' with reference to null hypothesis and alternate hypothesis.

GROUP - C

(Long Answer Type Questions)

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

7. What do you mean by Quantitative Structure Activity Relationship (QSAR) ? Discuss how Hansch Analysis is carried out to predict biological action of a drug. $7 + 8$
8. Discuss the different phases of clinical trials.

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9. The UV-absorbance values of six standard solutions of a drug are given in the following table :



Conc. $\mu\text{g/ml}$	Absorbance
x	y
10	0.106
20	0.202
30	0.311
40	0.416
50	0.504
60	0.606

Assume that the data may be fitted to a linear regression

model of absorbance = $a + b \times$ concentration

- a) Calculate the slope, b
- b) Calculate the intercept, a
- c) Calculate the correlation coefficient, r .
10. a) What do you mean by Database ? Differentiate between DBMS and RDBMS. Describe the various data types available in FOXPRO.
- b) Describe the commands "USE" & "DISPLAY" with syntax and examples. (1 + 2 + 7) + 5

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11. Three different types of sustained release tablets are prepared using three different grades of Eudragit such as RS PO, Rs. 100 and RL 100 using 4 different types of tablet compression machines. The % drug release after 30 minutes is given below :

Different grades of Eudragit	Different types of tablet compression machines			
	Type I	Type II	Type III	Type IV
RS PO	9	10	9	10
RS 100	12	11	9	11
RL 100	11	12	10	12

- Perform a two-way analysis of variance on these data and prepare the ANOVA table.
- Discuss whether there is any significant difference between different types of tablet compression machines or between different grades of Eudragit.
- Also test at 5% level which pairs of Eudragit grades differ significantly, if any.

[Given, for degrees of freedom (2, 6) $F_{0.05} = 5.14$

for degrees of freedom (3, 6) $F_{0.05} = 4.76$

for degrees of freedom 6, $t_{0.025} = 2.45$]. (6 + 3) + 3 + 3

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