

FINALTERM EXAMINATION

SPRING 2006

STA301 - STATISTICS AND PROBABILITY (Session - 3)

Marks: 50

Time: 120min

StudentID/LoginID: _____

Student Name: _____

Center Name/Code: _____

Exam Date: Thursday, August 17, 2006

Please read the following instructions carefully before attempting any of the questions:

- 1. Attempt all questions. Marks are written adjacent to each question.**
- 2. Do not ask any question about the contents of this examination from anyone.**
 - a. If you think that there is something wrong with any of the questions, attempt it to the best of your understanding.**
 - b. If you believe that some essential piece of information is missing, make an appropriate assumption and use it to solve the problem.**
 - c. Write all steps, missing steps may lead to deduction of marks.**
- 3. You are allowed to use the calculator & Statistical tables in order to solve the questions.**
- 4. For your convenience we are providing you the following symbols,**
 \sum , \cap , \bar{X} or write Mean, s , σ or **sd** for standard deviation, s^2 σ^2 or **sd²** or variance for variance, $\sqrt{\quad}$, $\sum \log x$,for square root or whole square root.

****WARNING: Please note that Virtual University takes serious note of unfair means. Anyone found involved in cheating will get an `F` grade in this course.**

For Teacher's use only											
Question	1	2	3	4	5	6	7	8	9	10	Total
Marks											
Question	11	12	13	14							
Marks											

Question No: 1 (Marks: 4)

If $m_1 = 0$, $m_2 = 2.64$, $m_3 = 0.08$, $m_4 = 28.30$ find b_2 .

Question No: 2 (Marks: 4)

What is $(1-\alpha)$. Explain it?

Question No: 3 (Marks: 4)

Differentiate between simple and composite hypothesis.

Question No: 4 (Marks: 1) - Please choose one

$$\frac{N-n}{N-1}$$

Correction factor is used for:

- ▶ n is small
- ▶ n is large
- ▶ Sampling without replacement
- ▶ Sampling with replacement

Question No: 5 (Marks: 1) - Please choose one

In Binomial Distribution, the random variable “X” has a range:

- ▶ 0, 1, 2, ..., n
- ▶ 0, 1, 2, ..., ∞
- ▶ $-\infty$ to $+\infty$
- ▶ $-\infty$ to 0

Question No: 6 (Marks: 1) - Please choose one

Probability of a ‘Jack card’ from the 52 playing cards is:

▶ $\frac{1}{52}$

▶ $\frac{4}{52}$

▶ $\frac{13}{52}$

▶ None of these

Question No: 7 (Marks: 1) - Please choose one

In normal distribution

▶ Mean > Median > Mode

▶ Mean < Median < Mode

▶ Mean = Median = Mode

▶ None of the these

Question No: 8 (Marks: 1) - Please choose one

If a false hypothesis is accepted, it is called:

▶ Level of significance

▶ Type-I error

▶ Type-II error

▶ Level of confidence

Question No: 9 (Marks: 1) - Please choose one

Which of the following is not composite hypothesis?

▶ $H_0 : \theta = \theta_0$

▶ $H_0 : \theta \leq \theta_0$

▶ $H_0 : \theta \geq \theta_0$

▶ $H_0 : \theta \neq \theta_0$

Question No: 10 (Marks: 1) - Please choose one

If the population standard deviation is not known and the sample size is large $(n \geq 30)$, then the test statistic to be used is

▶ t-test

▶ Z-test

▶ Chi-square test

▶ None of these

Question No: 11 (Marks: 1) - Please choose one

Critical region is the part of the sampling distribution for which the null hypothesis is

▶ Rejected

▶ Accepted

▶ Ignored

▶ None of these

Question No: 12 (Marks: 10)

The table shows the frequency distribution of the number of spelling mistakes in a composition made by each pupil in class of 36.

No of Mistakes (x)	No of Pupils (f)
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0	3
1	7
2	10
3	6
4	5
5	3
6	1
7	1

Calculate the Mean, Median and Mode.

Question No: 13 (Marks: 10)

A secretary makes 2 errors per page on the average. What is the probability that on the next page she makes

- (a) 4 or more errors
- (b) No error

Question No: 14 (Marks: 10)

A producer of a certain flashlight dry cell batteries claims that its output has a mean life of 750 minutes. A random sample of 15 such batteries was tested and a sample mean of 745 minutes with a sample s.d of 24 minutes was obtained. Verify that these results are consistent with the null

hypothesis $\mu \geq 750$ against $\mu < 750$ at Use. $\alpha = 0.01$