



SCHOOL OF PROFESSIONAL STUDIES

BACHELOR OF HOSPITALITY AND TOURISM MANAGEMENT

UNIT CODE: BHT 412, UNIT NAME: STATISTICS MANAGEMENT

September – December 2018/2019 End Semester Exam - Time: 2 Hours

Instructions: Answer Question ONE (Compulsory) and any other TWO questions.

QUESTION ONE

- a) Define the following terms
- Statistical inference
 - Point estimate
 - Unbiased estimate (3 Marks)
- b) A sample of eleven plants gave the following shoot lengths
10.1, 21.5, 11.7, 12.9, 14.8, 11.0, 19.2, 11.4, 22.6, 10.8, 10.2
An earlier study reported that the mean shoot length is 15cm. Test whether the experimental data confirms the old view at 10% level of significance? (4 Marks)
- c) Distinguish between
- Degrees of freedom and Sampling distribution
 - Parameter and statistic (4 Marks)
- d) The standard deviation of the life for a particular brand of light bulb is known to be $\sigma = 400$ hrs and the operating life of the tubes is normally distributed. The manufacturer claims that the average tube life is at least 9100 hrs. Test this claim at 5% level of

significance against the alternative hypothesis that mean life is less than 9100 hrs. given the fact that for a sample size of 20 tubes, the mean operating life was $\bar{X} = 8800$ hrs
(5 Marks)

- e) Assume that a population is composed of 900 elements with a mean of 20 units and a standard deviation of 12. What is the standard error of the sampling distribution if $n=36$ and if $n=64$
(3 Marks)

- f) Two random sample were drawn from two normal population and their values are

A: 364, 366, 374, 378, 382, 385, 387, 392, 393, 395, 397
(4 Marks)

B: 366, 367, 375, 376, 382, 384, 388, 390, 392

Test whether the two population have the same variance at 5% level of significant?

- g) Suppose the average number of lions seen on a 1- day safari is 5. What is the probability that the tourist will see fewer than four lions on the next 1-day
(7 Marks)

Question Two

- a) The price of an "HP" computer decreases at a rate shown in the table below.

Age (yrs)	1	2	3	4	5	6	7	8	9	10
Price(x sh 100)	108.4	102.2	95.5	87.2	81.1	75.4	70.2	65.0	58.7	52.5

- (i) Compute the product moment correlation coefficient
(5 Marks)
- (ii) Find the least squares regression line of the price (y) on age (x) for the data and use it to find the most likely price for a computer of $8\frac{1}{2}$ years
(5 Marks)
- b) A newspaper article stated that student at a particular Garissa University spend an average of Kshs 95 on beer. A student investigator who believed this average was too high polled a random sample of 50 students and found that $\bar{x} = 92.25$ and $\sigma = 10$

- i. In order to test whether this claim, would you advice the student to use one tail or two tailed hypothesis? Explain your answer
- ii. Use the data in (i) to test at 5% significant level the statement made by the newspaper

(5 Marks)

Question THREE

- c) In a study of the television viewing habits of children a development psychologist selects a random sample of 300 first graders- 100 boys and 200 girls. Each child is asked which of the following TV programs they like best Citizen, KTV and NTV. Results are shown in the contingency table below.

Viewing Preferences				
	KTN	CITIZEN	NTV	Row Total
Boys	50	30	20	100
Girls	50	80	70	200
Columns	100	110	90	300

- i. Do boys preference for the tv programs differ significantly from the girls preferences? Use 0.10 level of significant?
 - ii. Write a report of this analysis
- b) The data given below are obtained from student record. Grade point average (x) and Graduate Record exams (y). Calculate the rank correlation coefficient for the data

(8 Marks)

Subject	1	2	3	4	5	6	7	8	9	10
X	8.3	8.6	9.2	9.8	8.0	7.8	9.4	9.0	7.2	8.6
Y	2300	2250	2380	2400	2000	2100	2360	2350	2000	2260

(7 Marks)

QUESTION FOUR

- a) The following table gives the sample data from a survey on income of managing directors of the sampled companies both in Kenya and Tanzania

Country	Income (in Euros)									
Kenya	5000	4680	4500	3200	6845	6500	6065	5147	4365	3933
Tanzania	3540	6500	2700	3200	2760	6245	5544	5498	4367	

- (i) Test whether the mean income for each country is above 4000 Euros at 5% level of significance (4 Marks)
- (ii) Test the population income variation of the two country (4 Marks)
- h) Below is a sample of earnings (in thousands of shillings) of fast food outlets in Kangemi in a month: 45, 38, 30, 37, 54, 49, 65, 40, 33, 28, 36, 48, 53 and 55
- i. Estimate the average earning of a fast food outlets in Kangemi (2 Marks)
- ii. Determine the 95% confidence interval of a food outlet in Kangemi in a month (5 marks)

QUESTION FIVE

- a) The time the individuals took to perform the standard set of tasks, to the nearest minute, is reported in table below.

Time											
12	16	15	13	16	10	15	17	14	12	15	13
10	17	18	16	19	12	17	15	17	14	16	10
15	18	15	14	20	16	14	11	16	13	10	12

Given that the old software required, on average, 13.5 minutes to perform a similar standard set of tasks, is there enough evidence to compel the manager to buy the new software at 10% level of significance? (5 Marks)

- b) An owner of a big firm agrees to purchase the product of a factory if the produced items do not have a variance of 0.5mm^2 in their length. To be sure of the specification the buyer selects a sample of 17 items from his lot. The length of each item was measured as follows.

18.57, 18.10, 18.61, 18.32, 18.33, 18.46, 18.12, 18.34, 18.57, 18.22, 18.63, 18.43, 18.37, 18.34, 18.64, 18.58, 18.34, 18.43. On the basis of the sample data should the buyer purchase the lot at 5% level of significant? (5 Marks)

- b) On experience it is found that Mr. Omondi is late for lecturers on four days of 30 working days. Let X denotes the number of times Mr. Omondi will be late for lecturers in the next 60 working days. Determine $P(5 < X < 10)$ (5 Marks)