

KABARAK



UNIVERSITY

**UNIVERSITY EXAMINATIONS
2009/2010 ACADEMIC YEAR**

**FOR THE DEGREE OF BACHELOR OF
COMMERCE**

COURSE CODE: BMGT 210

COURSE TITLE: BUSINESS STATISTIC I

STREAM: Y2S1

DAY: TUESDAY

TIME: 2:00 – 4:00 P.M.

DATE: 16/03/2010

INSTRUCTIONS:

- 1.) Question ONE is compulsory. Answer **THREE** questions in total.
- 2.) Question one carries 30 marks while other questions carry 20 marks each.
- 3.) Illustrate where possible.

PLEASE TURNOVER

QUESTION 1

- (a) Explain the following
- (i) Objective probability (3 marks)
 - (ii) Subjective probability (3 marks)
- (b) A firm has tendered two independent contracts. If it estimates that it has a probability of 0.6 of obtaining contract A and probability 0.1 of obtaining contract B, find the probability that a firm
- i) Obtains both contracts (3 marks)
 - ii) Obtains neither of the contracts (3 marks)
 - iii) Obtains exactly one contract (3marks).
- (c) Explain why sampling is preferred to complete enumeration in research in most cases? (6 marks)
- (d) A local management consultancy firm intends to conduct a survey on viable and prospective business opportunities for its clients: small scale business entrepreneurs. Available information shows that there are approximately 2000 successful small business units in Nakuru. 20% of these business units engage in transport services, 25% are hotels and restaurants, 18% are small scale manufacturers and the rest are engaged in wholesale and retail business.
- i.) Suggest, with reasons, the suitable sampling method for this study (3 marks).
 - ii.) Using the selected sampling method in (i) above, explain how the researcher could obtain a final sample whose size is 20% of the target population. (6 marks)

QUESTION 2

- (a) The data below shows the incomes of the workers of a small firm in Nakuru town in thousands

6	15	8	4	13	4
3	10	5	3	9	11
5	4	13	12	6	2
3	6	4	5	3	3
9	3	5	11	7	5

- (i) Establish an interval distribution for the above earnings (6 marks)
- (ii) Find the arithmetic mean, median and mode salary for the workers in this firm (10 marks).
- (iii) Using the mean, median and mode values, comment on the skew of this distribution (2 marks).
- (iv) Using the data above, draw a histogram (2 marks).

QUESTION 3

- (a) What is Geometric mean and when is it applied? (4 marks).
- (b) Given a data series as 4, 8 and 16, prove the condition that:
Harmonic mean < Geometric mean < Arithmetic mean (4 marks)
- (c) (i) When is coefficient of variation applied? (3 marks)
(ii) Suppose two investments have the following expected returns and standard deviations of returns:

Project	Expected Returns	Standard Deviation
X	Ksh. 50,000	Ksh. 40,000
Y	Ksh. 250,000	Ksh. 125,000

- Using coefficient of variation, determine which among the two projects is riskier and why? (5 marks)
- (d) The mean and standard deviation of two distributions, of 100 and 150 items are 50, 5 and 40, 6 respectively. Find the standard deviation of all the 250 items taken together. (4 marks)

QUESTION 4

- (a) Compare and contrast variance and standard deviation as measures of variability pointing out which is better (6 marks).
- (b) Suppose you are given two variables X and Y as

X		Y	
Mid-point	Frequency	Mid-point	Frequency
15	15	100	340
20	33	150	492
25	56	200	890
30	103	250	1420
35	40	300	620
40	32	350	360
45	10	400	187
		450	140

Using quartile deviation, show the distribution which is more dispersed. (5 marks)

(c) A random sample of 50 households in Nakuru town has been selected to establish a price index for household needs. The average monthly data obtained is as follows;

	Prices		Quantities (units)	
	2000	2001	2000	2001
Maize flour/unit	2.00	2.50	10	20
Cabbages/unit	3.00	3.60	5	6
Milk/unit	1.60	2.00	3.5	40
Bread/unit	2.00	2.30	15	20
Butter/unit	10.00	11.00	2.5	2

- (i) Calculate and interpret the Laspeyres price index (7 marks)
(ii) What are the weaknesses of this measure? (2 marks)

QUESTION 5

- (a) Explain the characteristics of normal distribution. (8 marks)
(b) Distinguish between marginal probability and joint probability (3 marks)
(c) Avenue supermarket has been the target of many shoplifters during the past three months but owing to increased security measures, 250 shoplifters have been caught and each shoplifter's gender is noted. Also recorded is whether the offender was a first time offender or repeat offender. The data collected was summarized as:

Sex	First time offender	Repeat offender	Total
Male	60	70	130
Female	44	76	120
Total	104	146	250

Assuming that an apprehended shoplifter is selected randomly, find;

- (i) the probability that the shoplifter is male (1 mark)
(ii) the probability that the shoplifter is a first time offender, given that the shoplifter is male. (2 marks)
(iii) the probability that the shoplifter is female, given that the shoplifter is a repeat offender.(3 marks)
(iv) the probability that the shoplifter is female, given that the shoplifter is either a first time offender or a repeat offender. (3 marks)