



THE MOMBASA POLYTECHNIC UNIVERSITY COLLEGE

(A Constituent College of JKUAT)

Faculty of Engineering & Technology

DEPARTMENT COMPUTER SCIENCE & INFORMATION TECHNOLOGY

DIPLOMA IN INFORMATION COMMUNICATION TECHNOLOGY

DIPLOMA IN INFORMATION TECHNOLOGY

DICT2K10J/DIT2K10J

EIT 2312 QUANTITATIVE TECHNIQUE 1

SPECIAL/SUPPLEMENTARY EXAMINATION

SERIES: FEBRUARY/MARCH 2012

TIME: 2 HOURS

Instructions to Candidates:

You should have the following for this examination

- *Answer Booklet*

This paper consist of **FIVE** questions in **TWO** sections **A & B**

Answer question **ONE (COMPULSORY)** and any other **TWO** questions

Maximum marks for each part of a question are as shown

This paper consists of **FOUR** printed pages

SECTION A (COMPULSORY)

QUESTION ONE

- a) Define the following terms as used in sampling:
- Population
 - Sample
 - Sample statistic
 - Population Parameter
- (8 marks)
- b) A multinational company has 100,000 computers whose standard deviation is 35. Random sample of 6,000 computers each are selected. Find the standard error of the samples.
- (4 marks)
- c) During a normal day, the average number of Lorries that unload at a deport is 3 per hour. Find the probability that in any hour at most 2 Lorries will arrive to unload.
- (4 marks)
- d) Explain on the following types of estimators:
- Point estimate
 - Interval estimate
- (4 marks)
- e) It is estimated that 80% of PC users have installed proprietary operating system. In a group of 1,000 PC users, compute the:
- Mean
 - Standard deviation of the users of proprietary operating system
- (5 marks)
- f) A random sample of 50 debts showed that the mean debt was \$92.50 with a standard deviation of \$24.05. Determine a 95% confidence limit for the mean debt.
- (5 marks)

SECTION B (Answer any two questions)

QUESTION TWO

- a) With the aid of sketches, distinguish between a bar graph and a scatter diagram.
- (4 marks)
- b) Explain the term regression analysis.
- (2 marks)
- c) The table below the height of a random sample of 10 patients. Use it to answer the questions that follow.

Patient	A	B	C	D	E	F	G	H	I	J
Height	62	64	66	68	70	72	74	76	78	80
Weight	66	67	72	72	57	76	72	76	87	82

- Represent the above data using a scatter diagram.
 - Using the least squares method, determine the equation of the regression line
 - Estimate the weight of a patient whose height is 71 inches.
- (4 marks)
(8 marks)
(2 marks)

QUESTION THREE

- a) Explain on the following sampling methods giving relevant examples on where they can be applied.
- Simple random sampling
 - Quota sampling
 - Stratified sampling
- (9 marks)
- b) In a random sample of 200 garages it was found that 79 sold car batteries at prices below that recommended by the manufacturer.
- Estimate the proportion of garages selling below the recommended price. (2 marks)
 - Calculate the 99% confidence interval for the proportion. (9 marks)

QUESTION FOUR

- a) State and explain on the **FOUR** components of time series. (8 marks)
- b) The table below shows the expenditure on computer consumables at a particular company over the last three years. Use it to answer the questions that follow.

Year	Expenditure in '000' Ksh			
	Quarter 1	Quarter 2	Quarter 3	Quarter 4
2007	20	32	62	29
2008	21	36	70	32
2009	23	42	79	46

- Using the moving average method, determine the trend values. (8 marks)
- Determine the seasonal factors using the additive model. (4 marks)

QUESTION FIVE

- a) Define the term index number. (2 marks)
- b) State any **FOUR** uses of index numbers. (4 marks)
- c) The weekly wages paid to three categories of workers in a company for the period 1996 – 1998 are as shown in the table below.

Category	1996		1997		1998	
	Wages \$	Number of workers	Wage \$	Number of workers	Wage \$	Number of workers
Managerial	470	25	510	20	520	20
Skilled	270	80	280	75	290	72
Manual	170	80	170	90	145	95

Calculate using 1996 as the base year

- i. Laspeyre's price index for 1997
- ii. Paasche's volume index for 1997
- iii. Fisher's price index for 1997

(14 marks)