MUEO

MOI UNIVERSITY

OFFICE OF THE DEPUTY VICE CHANCELLOR, ACADEMIC AFFAIRS, RESEARCH & EXTENSION

UNIVERSITY EXAMINATIONS

2014/2015 ACADEMIC YEAR

SECOND YEAR END OF SEMESTER EXAMINATIONS

FOR THE DEGREE OF
BACHELOR OF BUSINESS MANAGEMENT

EXAM CODE:- **BBM 211**

COURSE TITLE:- **BUSINESS STATISTICS**

DATE:- 8TH DECEMBER, 2015 **TIME:-2.00P.M. – 5.00P.M.**

INSTRUCTION TO CANDIDATES

- SEE INSIDE.

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COURSE CODE: BBM 211
COURSE TITLE: BUSINESS STATISTICS

Instructions to candidates: 1. Answer Question **ONE** and Any Other Three Questions

QUESTION ONE:

a. The manager of a hotel conducted a survey and took a sample of 13 customers' spending at the salad bar during lunch time. The data is given below in terms of Ksh spent at the hotel: 298,562,492,266,266,512, 631, 451, 264, 545, 317, 426, 342 (17 marks)

i. Calculate the mean, median and mode.

ii. Looking at the distribution of the spending, which measure of central tendency do you think is best and which one is worst? Why?

iii. Calculate the first quartile, third quartile, range and the interquartile range.

iv. Calculate the variance, standard deviation (SD) and the coefficient of variation (CoV). Interpret the result of the standard deviation.

v. A manager informs his staff that a customer will spend "almost certainly not more than Ksh 500". On the basis of the results of (i) and (ii), evaluate the accuracy of the statement.

b. Explain the following terms (8 marks)

a. Statistical inference?
b. The purpose of estimation?
c. What are the properties of good estimators?
d. What is the standard error of the mean?

(TOTAL:25 Marks)

QUESTION TWO:

a. For questions i-iii, indicate the *type of data* described and justify your answer. (6 marks)

I. In a web-based survey, customers are asked to rate your company's product on the following scale: Excellent, good, average, and poor.

II. In the same survey, customers are asked to provide their gender: male or female.

III. As part of a quality improvement program, your mail order company records the length of time every customer spends on hold waiting to place their order via the telephone.

b. From the following data calculate the first four moments and also find the value of (γ_1)

Monthly income	Number of companies (frequency)
Less than 7.5	17
7.5 - 12.5	13
12.5 - 17.5	20
17.5 – 22.5	36
22.5 – 27.5	26

(9 marks)

QUESTION THREE

a. Two different models are available for the same machine. The production statistics (number of units produced per hour) of these two models are given below. The data was collected on different days.

Model A: 180, 176, 184, 181, 190, 137,

Model B: 195, 194, 190, 192, 187, 185, 187,

Among the two models which one has the highest productivity? (7 marks)

b. A soft-drink machine is designed so that the amount of drink dispensed averages 240 milliliters (ml) with a standard deviation of 15 ml. periodically, the machine is checked by taking a sample of 40 drinks and computing the average content. If the mean of the 40 drinks is a value in the highest 2.5% or lowest 2.5% of all possible sample means, the machine is declared to be faulty. Otherwise, the machine is declared to be working well. 4. A company official took a sample of 40 drinks and found that the sample mean is 236 ml.

What conclusion should be made? (5 marks)

(TOTAL 15 MARKS)

QUESTION FOUR

The price of the ordinary 25p shares of AMACO Insurance Company quoted on the stock exchange, at the close of the business on successive Fridays is tabulated below

126	120	122	105	129	119	131	138
125	127	113	112	130	122	134	136
128	126	117	114	120	123	127	140
124	127	114	111	116	132	128	137
127	122	106	121	116	130	142	130

Required

a) Group the above date into four classes. (1 marks)

b) Calculate cumulative frequency, the median value, quartile values and the semi-quartile range. (3 marks)

c) Calculate the mean and standard deviation of your frequency distribution. (5 marks)

d) Compare and contrast the values that you have obtained for:

i) The median and mean (3 marks)

ii) The semi-interquartile range and the standard deviation (3marks)

(Total: 15 marks)

QUESTION FIVE

1. The heights of 270 students are recorded in the following table.

Height (h) in cm	Frequency
$140 \leq h < 150$	12
$150 \leq h < 160$	38
$160 \leq h < 170$	73
$170 \leq h < 180$	84
$180 \leq h < 190$	30
$190 \leq h < 200$	21
$200 \leq h < 210$	12

a. Write down the modal group. **(2 Mark)**

b. Calculate an estimate of the mean and standard deviation of the heights. **(4 Mark)**

c. Draw the cumulative frequency curve for this data is drawn below. **(5 marks)**

I. Write down the median height. **(1 mark)**

II. Write down the median height. **(1 mark)**

d. The upper quartile is 177.3 cm. Calculate the interquartile range. **(2 marks)**

e. Find the percentage of students with heights less than 165 cm. **(2 marks)**

QUESTION SIX

a. The weight of 85 students was tabulated as follows:

Weight of Student	0-20	20-30	30-40	40-50	50-60
No. Of students	4	10	9	11	19
Weight of Student	60-70	70-80	80-90	90-100	Over 100
No. Of students	11	7	6	5	3

I. Calculate the mean, median, and mode weight of the students **(7 Marks)**

b. Distinguish between discrete and continuous data. **(2 mark)**

c. What is dispersion and what is the formula for the standard deviation? **(2 mark)**

d. What is the measure of relative dispersion? **(2 mark)**

e. Draw diagrams showing positive and negative Skewness **(2 mark)**

Merry Charismas and Happy New Year