MACHAKOS UNIVERSITY COLLEGE

(A Constituent College of Kenyatta University)
University Examinations for 2015/2016 Academic Year

SCHOOL OF PURE AND APPLIED SCIENCES

DEPARTMENT OF MATHEMATICS AND STATISTICS

FIRST SEMESTER EXAMINATION FOR DIPLOMA IN TOURISM AND HOSPITALITY MANAGEMENT

INTRODUCTION TO STATISTICS IN TOURISM

DATE: 11/8/2016 **TIME: 8:30 – 10:30 AM**

INSTRUCTIONS:

Answer QUESTION ONE and Any other TWO Questions

QUESTION ONE (COMPULSORY)

a) What is tourism statistics? (2 marks)

b) What are the two uses of tourism statistics (2 marks)

c) State four key tourism statistics (4 marks)

d) Construct a probability tree diagram that describes all three-child families according to the genders of the children with respect to birth order. (2 marks)

i) Give the sample space (2 marks)

ii) Find the probability that; (4 marks)

i. All the children are girls
ii. Exactly two of the children are girls

e) Draw the stem and leaf diagram for the following data. (4 marks)

46,59,35,41,46,21,24,33,40,45,49,53,48,54,61,36,70,58,47,12

f) Calculate the coefficient of correlation between X and Y series to 4 decimal place (6 marks)

X	1	3	5	7	8	10
Y	8	12	15	17	18	20

g) A sample of 100 fluorescent tubes from the Short Life Tube Company gives a mean length of life of 20.5 hours with a standard deviation of 1.6 hours. Find a 99% confidence interval for the average length of life of those tubes. (4 marks)

QUESTION TWO

a) Using the normal tables to find: (3 marks)

i. $P(z < 0.52)$

ii. $P(0.02 < z < 1.02)$

iii. $P(z > 0.51)$.

b) Computers consist of a number of components one of which is a memory. These memories, produced by an automatic process, have working life which is normally distributed with a mean of 500 hours and a standard deviation of 30 hours. If one thousand of these memories are selected at random from the production line, answer the following questions.

i. How many of the memories would you expect to last for longer than 550 hours? (3 marks)

ii. How many memories would you expect to have a life of more than 560 hours or less than 440 hours? (4 marks)

c) Marks obtained by a student in Statistics and Calculus (out of 100) are given in the following table: Give your answer to 4 decimal place.

Statistics (x)	80	45	55	56	58	60	65	68	70	75	85
Calculus (y)	82	56	50	48	60	62	64	65	70	74	90

i) Find the mean of each subject (2 marks)

ii) Find the equation of regression line of y on x (8 marks)

QUESTION THREE

a) The data below represents the scores by 150 applicants in an achievement text for the post of Botanist in a large company: Give your answer to 2 decimal place.

Scores	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99
Frequency	1	6	9	31	42	32	17	10	2

Estimate (16 marks)

(i) The mean score

(ii) The median score

(iii) The modal score

(iv) Standard deviation

b) Draw a histogram for the following data (4 marks)

Daily wages	Number of workers
0-50	8
50-100	16
100-150	27
150-200	19
200-250	10
250-300	6

QUESTION FOUR

a) For the table below, find by calculation (using appropriate expression) (12marks)

Marks	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99
Frequency	8	10	14	26	20	16	4	2

i) Lower quartile, Q_1
ii) Upper Quartile, Q_3
iii) Semi-interquartile range
iv) 45th percentile of the following distribution

b) A firm of stockbrokers will on average handle 2500 share a day with a standard deviation of 250 shares. If the number of shares sold is normally distributed:

i. What is the probability that they will sell either more than 3125 or less than 2000 shares (4 marks)

ii. What is the probability that less than 2700 shares will be sold in one day? (2 marks)

QUESTION FIVE

a) The following data are the marks obtained by 10 students in a class in two tests.

Calculate the spearman's rank correlation coefficient to 4 decimal place. (10 marks)

Students	A	B	C	D	E	F	G	H	I	J
Test 1	70	68	67	55	69	60	75	63	79	72
Test 2	65	67	80	85	68	58	75	63	60	70

b) The following two-way contingency table gives the breakdown of the probabilities of the population of adults in a particular locale according to employment type and level of life insurance:

Employment type	Level of Insurance		
	Low	Medium	High
Unskilled	0.07	0.19	0.00
Semi-skilled	0.04	0.28	0.08
Skilled	0.03	0.18	0.05
Professional	0.01	0.05	0.02

An adult is selected at random. Find each of the following probabilities.

i) The person has a high level of life insurance. (2 marks)

ii) The person has a high level of life insurance, given that he does not have a professional position. (3 marks)

iii) The person has a high level of life insurance, given that he has a professional position. (3 marks)

c) A single fair die is rolled. Let A= {3} and B= {1, 3, 5}. Are A and B independent? (2 marks)