



# MURANG'A UNIVERSITY OF TECHNOLOGY

## SCHOOL OF PURE AND APPLIED SCIENCE

DEPARTMENT OF APPLIED SCIENCE

UNIVERSITY ORDINARY EXAMINATION

2017/2018 ACADEMIC YEAR

**THIRD YEAR SECOND SEMESTER EXAMINATION FOR DEGREE OF  
BACHELOR OF HOSPITALITY AND TOURISM MANAGEMENT**

AMS 334 – STATISTICAL METHODS IN HOSPITALITY AND TOURISM

DURATION: 2 HOURS

DATE: 20<sup>TH</sup> APRIL, 2018

TIME: 9.00 – 11.00 A.M.

### **Instructions to Candidates:**

1. Answer **Question 1** and **Any Other Two** questions.
2. Mobile phones are not allowed in the examination room.
3. You are not allowed to write on this examination question paper.

## SECTION A – ANSWER ALL QUESTIONS IN THIS SECTION

### QUESTION ONE

a) Define the following terms as used in probability and statistics

i. Population and sample

ii. Conditional probability in relation to events A and B

iii. Descriptive and inferential statistics

(6 marks)

b) The age distribution of 50 workers in a hotel is given by the frequency distribution below

Ages (years)	16-20	21-25	26-30	31-35	36-40	41-45	46-50	51-55
Frequency	2	10	12	x	10	8	2	3

i. Find the value of x

(2 marks)

ii. Calculate the median of the data

(3 marks)

iii. Calculate the upper quartile of the data

(2 marks)

c) A student is likely to wake up on time with a probability of  $\frac{3}{4}$ . If he wakes up on time, there is a probability of  $\frac{9}{10}$  that he will arrive in the dining hall in time for breakfast. If he oversleeps, there is a probability of  $\frac{1}{2}$  that he will arrive at the dining hall in time for breakfast. If he is late in arriving at the dining hall there is a probability of  $\frac{2}{3}$  that he will miss breakfast, but on any occasion he arrives at the dining hall on time he has breakfast. What is the probability that on any day he will miss breakfast?

(5 marks)

d) The following data shows masses of railway bolts in grams (x) and the corresponding length (y)

X	11	13	14	16	18	19	21	24
Y	11	12	14	14	15	17	18	19

Determine the spearman correlation coefficient between x and y and explain their values

(5 marks)

e) The heights of two hundred students were measured and it was found that the mean height was 69.1 inches; the median height was 69.5 inches and the standard deviation 2.9 inches. Calculate the second Pearson measure of skewness for this distribution.

(3 marks)

f) The following nine measurements are the height in inches of a sample of nine tourists from China in a given hotel.

Height (x): 69, 66, 67, 69, 64, 63, 65, 68, 72. Calculate the sample variance of their heights

(4 marks)

## SECTION B – ANSWER ANY TWO QUESTIONS IN THIS SECTION

### QUESTION TWO

The following data represents the reported weights (kg) for 40 students in a class

47	50	79	45	46	80	82	72
75	74	57	69	65	52	55	60
64	73	61	60	71	70	68	68
65	55	59	61	60	66	54	70
62	53	65	56	52	72	67	58

- a) Using class interval of size five and starting from 45-49, ..., prepare a frequency distribution table for the given data. (3 marks)
- b) Using 62 as the assumed mean, calculate the
- Mean (3 marks)
  - Standard deviation (5 marks)
  - Coefficient of variation (3 marks)
  - Mode (2 marks)
  - Draw a frequency distribution curve and estimate the median (4 marks)

### QUESTION THREE

The table below shows the final grades in algebra and physics obtained by 10 students selected at random from a large group of students.

Algebra (x)	75	80	93	65	87	71	98	68	84	77
Physics (y)	82	78	86	72	91	80	95	72	89	74

- a) Draw a scatter diagram for the above data (3 marks)
- b) Calculate the Karl Pearson correlation coefficient for the above data (11 marks)
- c) Find the least square regression equations of Physics (y) on Algebra (x) and estimate the grade in Physics if a candidate scored a grade of 20 in Algebra (6 marks)

### QUESTION FOUR

- a) The data below gives the volume of liquid (in litres) in five different cans; 12.3, 12.1, 12.2, 12.3, 12.4.  
Compute the geometric mean of this data to two decimal places (2 marks)

- b) Two fair six-faced dice are tossed simultaneously. The scores on the top most face from each throw are recorded.

What is the probability

- i. The sum of the two scores is ten (2 marks)
  - ii. The score gives a double and also a sum of scores equal to 10
  - iii. The sum of the scores is either 9 or 10 (2 marks)
- c) The grouped frequency below shows the results in IQ Test performed on a group of 50 students

IQ test marks	90-94	95-99	110-104	105-109	110-114	115-119	120-124	125-129
Frequency	2	7	9	14	9	4	3	2

By calculation estimate

- i. The interquartile range (4 marks)
- ii. The 10<sup>th</sup> and 90<sup>th</sup> percentile (6 marks)
- iii. The percentile coefficient of Kurfosis (3 marks)