



MACHAKOS UNIVERSITY

University Examinations 2019/2020

SCHOOL OF BUSINESS AND ECONOMICS

DEPARTMENT OF BUSINESS ADMINISTRATION

SECOND YEAR SECOND SEMESTER EXAMINATION FOR

DIPLOMA IN HUMAN RESOURCE MANAGEMENT

DIPLOMA IN SUPPLY CHAIN MANAGEMENT

DIPLOMA IN BUSINESS MANAGEMENT

DIPLOMA IN INFORMATION SCIENCE

QUANTITATIVE TECHNIQUES

DATE: 6/11/2020

TIME: 8:30 – 10:30 AM

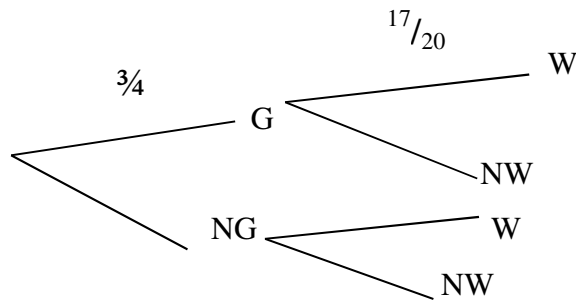
INSTRUCTIONS: Answer Question One and Any Other Two Questions

1. a) Define the following terms
 - i) Quantitative techniques
 - ii) Statistical techniques
 - iii) Programming techniques
- b) Discuss any limitations of quantitative techniques (8 marks)
- c) given the set of data 2,3,4,5.
Calculate
 - i) Harmonic mean
 - ii) Geometric mean
 - iii) Standard deviation
- d) Define the terms
 - i) correlation
 - ii) Regression
- e) Given the matrices $A = \begin{bmatrix} 3 & 0 \\ 4 & 2 \end{bmatrix}$ $B = \begin{bmatrix} 2 & 5 \\ 1 & 7 \end{bmatrix}$ and $C = \begin{bmatrix} 4 & 1 \\ 3 & 2 \end{bmatrix}$ Evaluate $3B+2A-C$ (3 marks)

2. a) from the following bi-variate distribution, find the regression equation of Y(price) on X(demand) (10 marks)

Demand (X)	10	8	5	4	2	1
Price (Y)	4	6	5	7	8	9

- b) A movie theatre charges sh080 for each adult admission and sh50 for each child. One Saturday, 525 tickets were sold, bringing in a total of 32550 sh. How many of each type of tickets were sold use matrix method to solve. (10 marks)
3. a) Today Philip intend to go walking. The probability of good weather (G) is $\frac{3}{4}$. If the weather is good, the probability he will go walking (W) is $\frac{17}{20}$. If the weather forecast is not good (NG) the probability he will go walking is $\frac{1}{5}$.
- Complete the probability tree diagram to illustrate the information
 - What is the probability that Philip will go walking (6 marks)



- b) A box contains 10 coloured light bulbs, 5 green, 3 red and 2 yellow.
- One light bulb is selected random and put in to light fitting room A. What is the probability that the light bulb selected is
 - Green (2 marks)
 - Not green (2 marks)
 - A second light bulb is selected at random and put the light fitting room B. What is the probability that:
 - The second light bulb is green given that the first bulb was green (2 marks)
 - Both light bulbs were not green (2 marks)
 - One room had a green bulb and the other room does not have a green light bulb (3 marks)

ii. A third bulb is selected at random and put it in the light fitting room C. What is the probability that:-

I. All the three rooms have green light bulbs

II. Only one room has a green light bulb.

4. The heights of 200 students were recorded in the table below:

Height in (h) cm	Frequency
140-150	2
150-160	28
160-170	63
170-180	74
180-190	20
190-200	11
200-210	2

- a) Write down the modal group (1 mark)
- b) write down the modal group
- c) Calculate mean (4 marks)
- d) Standard deviation (4 marks)
- e) Plot a cumulative frequency curve for this data (7 marks)