



MACHAKOS UNIVERSITY
University Examinations 2020/2021 Academic Year
SCHOOL OF PURE AND APPLIED SCIENCES
DEPARTMENT OF MATHEMATICS AND STATISTICS
SECOND YEAR SECOND TERM EXAMINATION FOR
DIPLOMA IN HUMAN RESOURCES MANAGEMENT
DIPLOMA IN INFORMATION COMMUNICATION TECHNOLOGY
QUANTITATIVE METHODS

DATE: 11/6/2021

TIME: 8.30-11.30 AM

INSTRUCTIONS:

Answer question one and any other two questions

1. a) explain advantages of using interview as a method of data collection. (10 marks)
b) a company advertised for a position of a managing director. The number of applicants for the position was 50, out of which 10 were shortlisted for interview. Determine the probability that an applicant selected at random will be;
 - i. Shortlisted for interview
 - ii. Shortlisted for interview and employed as the managing director
 - iii. employed as the managing director, given that he has been shortlisted for interview
 - iv. Shortlisted for interview and not employed as the managing director
 - v. Not shortlisted for interview (20 marks)
- 2 a) Differentiate between each of the following terms as used in financial mathematics:
 - i) Perpetuity and annuity
 - ii) Ordinary annuity and annuity due (5 marks)b) The following are the ranks awarded to ten employees in a company by three judges X,Y and Z according to their performance

employee	Judge x	Judge y	Judge z
A	4	8	8
B	7	5	5
C	10	9	7
D	1	2	1
E	5	4	3
F	2	3	4
G	6	7	6
H	9	10	10
I	8	6	9
J	3	1	2

- i) Calculate spearman's rank correlation coefficient for each pair of judges
- ii) Based on the results in (i) above determine the pair of judges that were most consistent in their ranking. (15 marks)

- 3 a) Explain 5 reasons for classification of data (5 marks)
- b) The following information shows the distribution of salaries of employees in a company

<u>Salary (ksh 000's)</u>	<u>number of employees</u>
10-20	4
20-30	24
30-40	16
40-50	12
50-60	16
60-70	6
70-80	10
80-90	8
90-100	4

Determine the:

- i) Mean salary
- ii) Median salary
- iii) Standard deviation (15 marks)
- 4 a) explain five reasons that make sampling to be preferred to census in the collection of data (10 marks)
- b) The following information shows the contribution to the national income in millions of shillings by three sectors of an economy

<u>year</u>	<u>mining</u>	<u>agriculture</u>	<u>fishing</u>
2015	150	550	300
2016	200	950	100
2017	280	700	420

Present the information in a percentage component bar chart (10 marks)

- c) The following are the sales of a company for the first ten months of the year 2017:

Month	sales (ksh.million)
January	20
February	18
March	22
April	35
May	27
June	28
July	38
August	33
September	31
October	41

- i. Using three period moving averages, determine the trend values of the sales
- ii. Based on the results (i), comment on the trend of the sales (10 marks)