KISII UNIVERSITY

UNIVERSITY EXAMINATIONS

SECOND YEAR EXAMINATION FOR THE AWARD OF

THE DEGREE OF BACHELOR OF ANIMAL SCIENCE

FIRST SEMESTER 2022/2023

SEPTEMBER – DECEMBER, 2022

MATH 141: INTRODUCTION TO STATISTICS

STREAM: Y2 S1 **TIME: 2 HOURS**

DAY: **DATE:**

INSTRUCTIONS

1. ***Do not write anything in this Question Paper.***
2. ***Answer Question ONE and any other TWO questions***

QUESTION ONE 30 MARKS

a) Define the term statistics [2 Marks]

b) Discuss five characteristics of statistics [5 Marks]

c) Find the mode of the following grouped frequency distribution [4 Marks]

Class	3-8	9-14	15-20	21-26	27-32	33-38
Frequency	12	14	25	30	11	10

d) How many arrangements can be made of the letters from the word **ANIMAL** [2 Marks]

e) If the distribution of Z is standard Normal Distribution N (0,1), find;

i. $P(0.8 \leq Z \leq 1.6)$ [2 Marks]

ii. $P(-1.7 \leq Z \leq 2)$ [2 Marks]

f) With examples distinguish between the following terms;

i. Descriptive and Inferential statistics [4 Marks]

ii. Primary and Secondary data [4 Marks]

g) A sample of 20 salaries of employees of an agricultural firm was taken. The following are the annual salaries (in thousands of Dollars). The data is as shown below;

41, 49, 50, 82,55, 87,52, 52, 47,44, 38,45,52, 62,63,57,61,88,74,79.

i. What is the median salary of the 20 employees [1 Mark]

ii. What is the first quartile of the 20 salaries [1 Mark]

iii. What is the third quartile of the 20 salaries [1 Mark]

iv. What is interquartile range of the 20 salaries [1 Mark]

v. What is the semi quartile range of the 20 salaries [1 Mark]

QUESTION TWO (20 MARKS)

a) The table below shows the scores of dairy cattle in terms of milk production in an agricultural farm. Since the year has three seasons then, the data for the first season and second season is provided. Use the data to develop a regression model to be used to predict the scores of dairy cattle in the second season [15 Marks].

Dairy Cattle	1	2	3	4	5	6	7	8	9	10
First Season	96	73	98	97	85	48	72	58	67	99
Second Season	90	78	74	92	76	64	78	77	89	94

b) Calculate mean absolute deviation from the mean and median of the following data;
120,170,220,380,510,520,620,691 [5 Marks]

QUESTION THREE (20 MARKS)

The data below represents a sample of 100 cattle brought for an agricultural exhibition at Kisii Agricultural Centre

Weight	10-20	20-30	30-40	40-50	50-60	60-70
Number of cattle	6	13	X	30	19	9

i. Find the value of X [1 Mark]
ii. Calculate the mean number of cattle brought for exhibition [4 Marks]
iii. Find the median number of cattle that were brought for the exhibition [4 Marks]
iv. Find the standard deviation for the data [6 Marks]
v. Find the first quartile, third quartile and quartile deviation for the data [5 Marks]

QUESTION FOUR (20 MARKS)

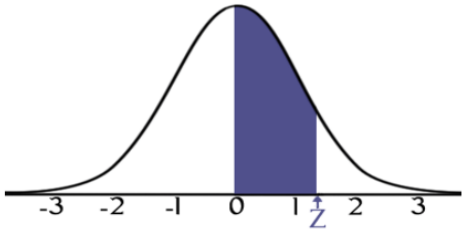
a) Calculate the product moment correlation coefficient for the following data [15 Marks]

X	10	23	41	56	68	77
Y	3.1	5.6	5.9	7.6	8.1	8.9

b) A farmer in Kisii selects 2 cows at random from 4 large, 5 medium and 6 small cows. What is the probability that they are

i. All large [2 Marks]

ii. All the same size [3 Marks]



STANDARD NORMAL TABLE (Z)

Entries in the table give the area under the curve between the mean and *z* standard deviations above the mean. For example, for $z = 1.25$ the area under the curve between the mean (0) and z is 0.3944.

z	0.00	0.01	0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.09
0.0	0.0000	0.0040	0.0080	0.0120	0.0160	0.0190	0.0239	0.0279	0.0319	0.0359
0.1	0.0398	0.0438	0.0478	0.0517	0.0557	0.0596	0.0636	0.0675	0.0714	0.0753
0.2	0.0793	0.0832	0.0871	0.0910	0.0948	0.0987	0.1026	0.1064	0.1103	0.1141
0.3	0.1179	0.1217	0.1255	0.1293	0.1331	0.1368	0.1406	0.1443	0.1480	0.1517
0.4	0.1554	0.1591	0.1628	0.1664	0.1700	0.1736	0.1772	0.1808	0.1844	0.1879
0.5	0.1915	0.1950	0.1985	0.2019	0.2054	0.2088	0.2123	0.2157	0.2190	0.2224
0.6	0.2257	0.2291	0.2324	0.2357	0.2389	0.2422	0.2454	0.2486	0.2517	0.2549
0.7	0.2580	0.2611	0.2642	0.2673	0.2704	0.2734	0.2764	0.2794	0.2823	0.2852
0.8	0.2881	0.2910	0.2939	0.2969	0.2995	0.3023	0.3051	0.3078	0.3106	0.3133
0.9	0.3159	0.3186	0.3212	0.3238	0.3264	0.3289	0.3315	0.3340	0.3365	0.3389
1.0	0.3413	0.3438	0.3461	0.3485	0.3508	0.3513	0.3554	0.3577	0.3529	0.3621
1.1	0.3643	0.3665	0.3686	0.3708	0.3729	0.3749	0.3770	0.3790	0.3810	0.3830
1.2	0.3849	0.3869	0.3888	0.3907	0.3925	0.3944	0.3962	0.3980	0.3997	0.4015
1.3	0.4032	0.4049	0.4066	0.4082	0.4099	0.4115	0.4131	0.4147	0.4162	0.4177
1.4	0.4192	0.4207	0.4222	0.4236	0.4251	0.4265	0.4279	0.4292	0.4306	0.4319
1.5	0.4332	0.4345	0.4357	0.4370	0.4382	0.4394	0.4406	0.4418	0.4429	0.4441
1.6	0.4452	0.4463	0.4474	0.4484	0.4495	0.4505	0.4515	0.4525	0.4535	0.4545
1.7	0.4554	0.4564	0.4573	0.4582	0.4591	0.4599	0.4608	0.4616	0.4625	0.4633
1.8	0.4641	0.4649	0.4656	0.4664	0.4671	0.4678	0.4686	0.4693	0.4699	0.4706
1.9	0.4713	0.4719	0.4726	0.4732	0.4738	0.4744	0.4750	0.4756	0.4761	0.4767
2.0	0.4772	0.4778	0.4783	0.4788	0.4793	0.4798	0.4803	0.4808	0.4812	0.4817
2.1	0.4821	0.4826	0.4830	0.4834	0.4838	0.4842	0.4846	0.4850	0.4854	0.4857
2.2	0.4861	0.4864	0.4868	0.4871	0.4875	0.4878	0.4881	0.4884	0.4887	0.4890
2.3	0.4893	0.4896	0.4898	0.4901	0.4904	0.4906	0.4909	0.4911	0.4913	0.4916
2.4	0.4918	0.4920	0.4922	0.4925	0.4927	0.4929	0.4931	0.4932	0.4934	0.4936
2.5	0.4938	0.4940	0.4941	0.4943	0.4945	0.4946	0.4948	0.4949	0.4951	0.4952
2.6	0.4953	0.4955	0.4956	0.4957	0.4959	0.4960	0.4961	0.4962	0.4963	0.4964
2.7	0.4965	0.4966	0.4967	0.4968	0.4969	0.4970	0.4971	0.4972	0.4973	0.4974
2.8	0.4974	0.4975	0.4976	0.4977	0.4977	0.4978	0.4979	0.4979	0.4980	0.4981
2.9	0.4981	0.4982	0.4982	0.4983	0.4984	0.4984	0.4985	0.4985	0.4986	0.4986
3.0	0.4987	0.4987	0.4987	0.4988	0.4988	0.4989	0.4989	0.4989	0.4990	0.4990
3.1	0.4990	0.4991	0.4991	0.4991	0.4992	0.4992	0.4992	0.4992	0.4993	0.4993
3.2	0.4993	0.4993	0.4994	0.4994	0.4994	0.4994	0.4994	0.4995	0.4995	0.4995
3.3	0.4995	0.4995	0.4995	0.4996	0.4996	0.4996	0.4996	0.4996	0.4996	0.4997
3.4	0.4997	0.4997	0.4997	0.4997	0.4997	0.4997	0.4997	0.4997	0.4997	0.4998