KISII UNIVERSITY

SCHOOL OF BUSINESS AND ECONOMICS

SECOND YEAR EXAMINATION FOR THE AWARD OF THE DEGREE OF BACHELOR OF HUMAN RESOURCE MANAGEMENT

BHRM 242: QUANTITATIVE METHODS IN MANAGEMENT

STREAM: BHRM Y2S1 **TIME: 2 HRS**

DAY..... **DATE.....**

INSTRUCTIONS

(i) Answer question **ONE** and any **other three** questions

(ii) Do not write on the question paper

(iii) Show your working clearly

QUESTION ONE (COMPULSORY) **(25 MARKS)**

(a) Explain where the mean as a measures of central tendency is appropriate touse in research **(3 marks)**

(b) What are the benefits of measures of dispersion in research? **(6 marks)**

(c) The data shown below represent the cigarette tax (in KES) for 30 randomly selected counties in Kenya. Check for normality.

3	58	5	65	17	48	52	75	21	76	58	36
100	111	34	41	23	44	33	50	13	18	7	12
20	24	66	28	28	31						

(6 marks)

(d) The following list consists of raw data measured speeds (mph) of 105 vehicles along a section of Thika Super Highway.

54.2 58.7 71.2 69.7 51.7 75.6 53.7 57.0 82.5 76.8

62.1	67.4	64.6	70.5	48.4	69.0	65.2	64.1	65.8	56.9
82.0	62.0	54.3	73.2	74.5	73.6	76.2	55.1	66.9	62.4
70.7	68.3	62.8	83.5	54.8	68.3	69.4	59.2	60.9	60.4
60.2	75.4	55.4	56.3	77.1	61.2	50.8	67.1	70.6	60.7
56.0	80.7	80.1	56.2	70.1	63.7	70.9	54.6	61.6	63.2
72.2	84.0	76.8	61.6	61.1	80.8	58.3	52.8	74.3	71.4
63.2	57.8	61.9	75.8	80.8	57.3	62.6	75.1	67.6	78.0
52.2	57.6	61.1	66.9	88.5	66.7	61.2	73.9	79.1	70.2
78.6	61.3	69.5	72.8	57.5	71.4	64.7	78.4	67.6	76.3
78.6	66.8	71.1	58.9	61.1					

Construct a frequency distribution table. Use 9 classes starting with 45–under 50

(4 marks)

(e) The following data was obtained during a social survey conducted in Kisii County regarding the annual income of given families and the corresponding expenditures.

Family	Annual income (x) KES '000'	Annual expenditure (y) KES '000'
A	420	360
B	380	390
C	520	510
D	610	500
E	400	360
F	320	290
G	280	250
H	410	380
J	380	240
K	300	270
Total	**4,020**	**3,550**

Calculate correlation coefficient and comment on the value obtained **(6 marks)**

QUESTION TWO **(15 MARKS)**

(a) A medical survey was conducted in order to establish the proportion of the population which was infected with cancer. The results indicated that 30% of the populations were suffering from the disease. A sample of 6 people was later taken and examined for the disease. Find the probability that the following outcomes were observed

(i) Only one person had the disease **(2 marks)**

(ii) Exactly two people had the disease **(3 marks)**

(iii) At most two people had the disease **(2 marks)**

(iv) At least two people had the disease **(2 marks)**

(b) A sample of students had a mean age of 35 years with a standard deviation of 5 years. A student was randomly picked from a group of 200 students. Find the probability that the age of the student turned out to be as follows

(i) Lying between 35 and 40 **(2 marks)**

(ii) Lying between 30 and 40 **(2 marks)**

(iii)Lying beyond 45 years **(2 marks)**

QUESTION THREE **(15 MARKS)**

A study conducted by a TV station showed the number of televisions per household and the corresponding probabilities for each. Find the mean, variance and standard deviation.

(10 marks)

Number of televisions, X	1	2	3	4
Probability, P(x)	0.32	0.51	0.12	0.05

If you were taking a survey on programs that were watched, how many program diaries would you send to each household in the survey? **(5 marks)**

QUESTION FOUR **(15 MARKS)**

(a) Explain the following terms as used in statistics:

(i) Mesokurtic **(3 marks)**

(ii) Leptokurtic **(3 marks)**

(iii) Platykurtic **(2 marks)**

(b) In a beauty competition during Kisii University Cultural Week, 2 assessors were asked to rank the 10 contestants using the professional assessment skills. The results obtained were given as shown in the table below:

Contestants	1st assessor	2nd assessor
A	6	5
B	1	3
C	3	4
D	7	6
E	8	7
F	2	1
G	4	8
H	5	2
J	10	9
K	9	10

Calculate the rank correlation coefficient and hence comment briefly on the value obtained **(7 marks)**

QUESTION FIVE **(15 MARKS)**

(a) Thirty automobiles were tested for fuel efficiency (in miles per gallon). The frequency distribution was obtained as shown below:

Class boundaries	Frequency
7.5-12.5	3
12.5-17.5	5
17.5-22.5	15
22.5-27.5	5
27.5-32.5	2

Calculate the following:

(i) Mean **(3 marks)**

(ii) Mode **(2 marks)**

(iii) Median Quartile range **(3 marks)**

(iv) Standard deviation

(v) Variance **(3 marks)**

(b) Explain where variance and standard deviation are used in business.

(4 marks)

Standard Normal Probabilities

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	0.0199	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

z	0.00	0.01	0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.09
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	0.2967	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	0.3531	0.3554	0.3577	0.3599	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.	0.477	0.477	0.478	0.478	0.479	0.479	0.480	0.480	0.481	0.481

z	0.00	0.01	0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.09
0	2	8	3	8	3	8	3	8	2	7
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

The values in the table are the areas between zero and the z-score. That is, P(0<Z<z-score)

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