



KENYATTA UNIVERSITY
UNIVERSITY EXAMINATIONS 2010/2011
INSTITUTIONAL BASED PROGRAMME (IBP) – AUGUST SESSION
EXAMINATION FOR THE DEGREE OF BACHELOR OF SCIENCE IN HOSPITALITY AND
TOURISM MANAGEMENT
HTM 314: STATISTICAL METHODS II

DATE: Friday 31st December, 2010

TIME: 11.00 a.m. – 1.00 p.m.

INSTRUCTIONS

Answer Question ONE and any other TWO questions.

1. a) Define the following terms as used in statistics:
- i) Raw data [1 marks]
 - ii) Random sample [2 marks]
 - iii) Quartile Deviation [2 marks]
 - iv) Measures of central tendency [2 marks]
 - v) Correlation coefficient [2 marks]
 - vi) Parameter [2 marks]
 - vii) Standard score [2 marks]
 - viii) Standard error [2 marks]
 - ix) Histogram [2 marks]
 - x) Ratio scale [1 mark]
- b) The following set of marks of 50 students of “Service Practical” subject in craft certificate in Food and Beverage examination

57,	70,	53,	61,	66,
60,	71,	55,	70,	61,
62,	61,	68,	88,	63,
72,	55,	92,	75,	70,

68,	80,	61,	74,	51,
56,	69,	65,	62,	51,
70,	70,	69,	63,	58,
51,	76,	60,	63,	45,
65,	71,	53,	64,	57,
70,	69,	62,	75,	63,

- i) Present the above marks, as a frequency distribution in interval class of 10 marks starting from 40. [3 marks]
 - ii) Draw an Ogive or Line graph of the distribution. [2 marks]
 - iii) Calculate the range. [1 mark]
 - iv) Calculate the Mean, Standard Deviation and Median, using your frequency distribution table. [6 marks]
2. During food testing there were 10 judges who participated, 6 women and 4 men, the following grading in percentages was recorded for each judge to determine, if there was gender bias in judgement.

<u>Judges</u>	<u>Gradings</u>
Jane	80
John	85
Mary	82
Judith	90
James	91
Janet	82
George	95
Hellen	93
Susan	89
David	79

- a) What is the appropriate correlational technique to use and why?
- b) Compute the correlation between two variables (Gender and Gradings)

c) What does this correlation mean? [20 marks]

3. A distribution of variable took a normal curve such that the mean was 60 and standard deviation of 8. [20 marks]

- a) What is the interval limits at 90% from the mean?
- b) What is the Standard score for variable 70?
- c) The percentile ranking for 44.
- d) Find the range for percentile 20 to 80.

4. Salt was packed in satchets and the following intervals of weights were recorded: [20 marks]

Interval Classes	Frequency
2.4 – less than 2.6	2
2.6 – less than 2.8	13
2.8 – less than 3.0	24
3.0 – less than 3.2	25
3.2 – less than 3.4	9
3.4 – less than 3.6	2

- a) What is the mean weight of the salt?
- b) Find the measure of variability.
- c) Calculate the inter-quartile range.

STATISTICS

SOME OF THE FORMULAS

Pearson r

$$r = \frac{n(\sum XY) - (\sum X)(\sum Y)}{\sqrt{[n\sum X^2 - (\sum X)^2][n\sum Y^2 - (\sum Y)^2]}}$$

Spearman rho

$$r_s = 1 - \left[\frac{6(\sum D^2)}{n(n^2 - 1)} \right]$$

$$\text{Median} = \text{LRL} + W \left[\frac{P \times N - \text{CFB}}{\text{FW}} \right]$$

LRL = Lower real limit of the interval containing the median
 W = Width of the interval,
 P = Percentile rank expressed as a proportion or 0.5
 CFB = Cumulative frequency below the lower real limit
 FW = Frequency within the interval containing the median

Mean of grouped distribution

$$\bar{X} = \frac{\sum fx}{N}$$

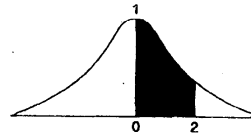
Where X is the middle scores of each interval.

Variance;

$$s^2 = \frac{\sum X_i^2 - \frac{(\sum X_i)^2}{N}}{N}$$

Table 1: Area Under Normal Curve

An entry in the table is the proportion under the entire curve which is between $z = 0$ and a positive value of z . Areas for negative values for z are obtained by symmetry.



Areas of a standard normal distribution

z	.0	.01	.02	.03	.04	.05	.06	.07	.08	.09
.0	.0000	.0040	.0080	.0120	.0160	.0199	.0239	.0279	.0319	.0359
.1	.0398	.0438	.0478	.0517	.0557	.0596	.0636	.0675	.0714	.0753
.2	.0793	.0832	.0871	.0910	.0948	.0987	.1026	.1064	.1103	.1141
.3	.1179	.1217	.1255	.1293	.1331	.1368	.1406	.1443	.1480	.1517
.4	.1554	.1591	.1628	.1664	.1700	.1736	.1772	.1808	.1844	.1879
.5	.1915	.1950	.1985	.2019	.2054	.2088	.2123	.2157	.2190	.2224
.6	.2257	.2291	.2324	.2357	.2389	.2422	.2454	.2486	.2517	.2549
.7	.2580	.2611	.2642	.2673	.2703	.2734	.2764	.2794	.2823	.2852
.8	.2881	.2910	.2939	.2967	.2995	.3023	.3051	.3078	.3106	.3133
.9	.3159	.3186	.3212	.3238	.3264	.3289	.3315	.3340	.3365	.3389
1.0	.3413	.3438	.3461	.3485	.3508	.3531	.3554	.3577	.3599	.3621
1.1	.3643	.3665	.3686	.3708	.3729	.3749	.3770	.3790	.3810	.3830
1.2	.3849	.3869	.3888	.3907	.3925	.3944	.3962	.3980	.3997	.4015
1.3	.4032	.4049	.4066	.4082	.4099	.4115	.4131	.4147	.4162	.4177
1.4	.4192	.4207	.4222	.4236	.4251	.4265	.4279	.4292	.4306	.4319
1.5	.4332	.4345	.4357	.4370	.4382	.4394	.4406	.4418	.4429	.4441
1.6	.4452	.4463	.4474	.4484	.4495	.4505	.4515	.4525	.4535	.4545
1.7	.4554	.4564	.4573	.4582	.4591	.4599	.4608	.4616	.4625	.4633
1.8	.4641	.4649	.4656	.4664	.4671	.4678	.4686	.4693	.4699	.4706
1.9	.4713	.4719	.4726	.4732	.4738	.4744	.4750	.4756	.4761	.4767
2.0	.4772	.4778	.4783	.4788	.4793	.4798	.4803	.4808	.4812	.4817
2.1	.4821	.4826	.4830	.4834	.4838	.4842	.4846	.4850	.4854	.4857
2.2	.4861	.4864	.4868	.4871	.4875	.4878	.4881	.4884	.4887	.4890
2.3	.4893	.4896	.4898	.4901	.4904	.4906	.4909	.4911	.4913	.4916
2.4	.4918	.4920	.4922	.4925	.4927	.4929	.4931	.4932	.4934	.4936
2.5	.4938	.4940	.4941	.4943	.4945	.4946	.4948	.4949	.4951	.4952
2.6	.4953	.4955	.4956	.4957	.4959	.4960	.4961	.4962	.4963	.4964
2.7	.4965	.4966	.4967	.4968	.4969	.4970	.4971	.4972	.4973	.4974
2.8	.4974	.4975	.4976	.4977	.4977	.4978	.4979	.4979	.4980	.4981
2.9	.4981	.4982	.4982	.4983	.4984	.4984	.4985	.4985	.4986	.4986
3.0	.4987	.4987	.4987	.4988	.4988	.4989	.4989	.4989	.4990	.4990