

**SOUTH EASTERN UNIVERSITY OF SRI LANKA**

**THIRD EXAMINATION IN BACHELOR OF BUSINESS ADMINISTRATION /  
BACHELOR OF COMMERCE – 2009 / 2010  
SEMESTER – II, FEBRUARY - 2012**

**MIS 3212 – STATISTICAL ANALYSIS FOR MANAGEMENT**

Answer All Questions.

Time: 03 Hours

01. a) Define the following terms:

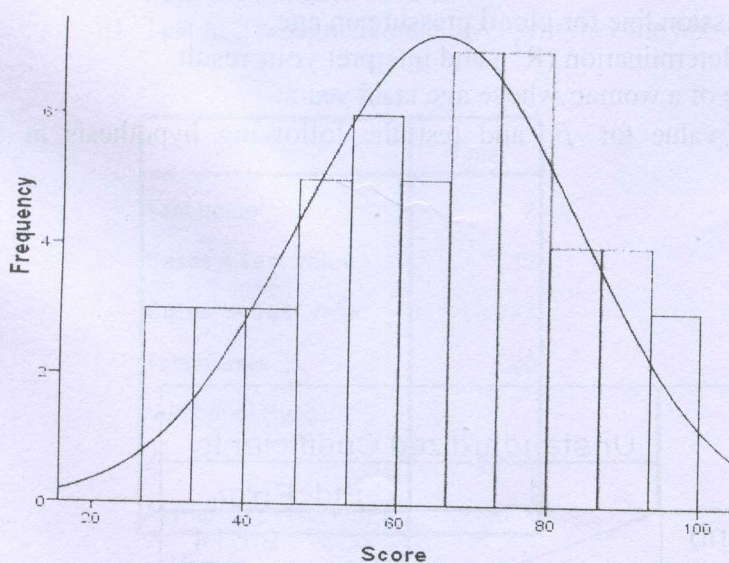
- i) Random Sample
- ii) Qualitative data
- iii) Outlier

b) Explain the following sampling techniques:

- i) Simple random sampling
- ii) Stratified random sampling
- iii) Systematic random sampling

b) The score on an aptitude test by a sample of 50 job applicants and the SPSS outputs are shown below.

44	39	30	36	39	33	27	44	47	45
58	56	49	53	54	51	49	58	60	60
68	68	62	65	66	64	61	68	71	70
80	77	73	76	77	74	73	79	81	80
95	90	83	87	88	85	83	93	97	94



Score		
N	Valid	50
	Missing	0
Mean		65.20
Median		67.00
Mode		68
Std. Deviation		18.385
Skewness		-.217
Std. Error of Skewness		.337
Kurtosis		-.789
Std. Error of Kurtosis		.662
Percentiles	25	50.50
	50	67.00
	75	80.00

- i) Interpret distribution of scores using histogram.
- ii) Find the inter quartile range.
- iii) Compute standard error of mean
- iv) Interpret skewness and kurtosis of data.
- v) Compute coefficient of variation of scores.

(20 Marks)

02. The following data give the age and blood pressure of 12 women.

Age	56	42	36	47	49	42	60	72	63	55	59	65
BP	147	125	118	128	145	140	155	160	149	150	144	160

- i) Plot a scatter diagram for the above data.
- ii) Find the correlation coefficient between age and blood pressure and interpret your result.
- iii) Fit a simple linear regression line for blood pressure on age.
- iv) Find the coefficient of determination ( $R^2$ ) and interpret your result
- v) Estimate blood pressure of a woman whose age is 45 years.
- vi) Compute test statistic value for  $\beta_1$  and test the following hypothesis at 5% significance level ,

$$H_0 : \beta_1 = 0$$

$$H_1 : \beta_1 \neq 0$$

Model		Unstandardized Coefficients	
		B	Std. Error
1	(Constant)		9.614
	Age		.175

(20 Marks)

03. a) Define the following terms:

- i) Null hypothesis
- ii) Type I error
- iii) Type II error

b) The following data give the checking account balances (in '00 Rs) on a certain day for a randomly selected sample 20 household.

500 660 440 800 370 660 550 450 600 540  
 790 850 500 680 450 780 700 720 830 600

Test at 5% significance level if the mean account balance of household is greater than Rs. 500.

c) The table that gives the blood pressures of eight adults before and after the completion of a special dietary plan is reproduced below.

Before	210	180	195	220	232	199	224	200
After	193	186	186	223	220	183	233	195

Test at the 5% significance level whether there is any change in blood pressure level after the special dietary plan.

(20 Marks)

04. a) List two differences between parametric and non-parametric test.

b) A college basket ball team played 25 games. The following data present the sequence of wins (W) and losses (L) for the season.

L L W W W L L L L W L L L W W W W W L L W W W

- i) Find the number of runs.
- ii) Test at 5% significance level whether the above data is random or not?

Runs Test

	Time
Test Value <sup>a</sup>	2
Cases < Test Value	12
Cases >= Test Value	13
Total Cases	25
Number of Runs	
Z	-2.038
Asymp. Sig. (2-tailed)	.042

a. Median

- c) A company agency that wanted to compare drying times for paints made by three companies tested a few samples of paints from each of these four companies. The following table records the drying times (in minutes) for these samples of paints.

Company A	Company B	Company C
42	47	45
53	60	45
43	44	51
47	39	58
40	60	44
51	43	41
56		47
58		54
		58

The uncompleted SPSS output was given below:

Source	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	1.068	<i>a</i>	<i>d</i>	<i>f</i>	.990
Within Groups	1041.889	<i>b</i>	<i>e</i>		
Total	1042.957	<i>c</i>			

- i) Compute the values of *a*, *b*, *c*, *d*, *e* and *f*
  - ii) Test at 5% significance level, whether the mean drying times for paints of these three companies are different. (20 Marks)
05. a) The following table lists the age distribution for a sample of 100 persons arrested for drunk driving.

Age	30-34	35-39	40-44	45-49	50 & over
Arrests	32	25	19	16	18

Test the null hypothesis that the proportions of people arrested for drunk driving is the same for all age groups. (Significance level is 5%)

- b) The following table gives the two-way classification of 1000 workers in a factory, according to the disciplinary action taken by the management and their promotional experience.

Disciplinary action	Promotional experience	
	Promoted	Not promoted
Offenders	30	670
Non-offenders	70	230

Test at 5% significance level, whether disciplinary action taken and promotional experience are associated. (20 Marks)