



Examination (Insert official title of the examination, as it appears at the head of the question paper

Title of paper: **COM 3032 Statistical Software Application in Business**

Index Number (Write very clearly):

Instructions to Candidates	For Examiner's Use only	
	Question No	Marks
<ol style="list-style-type: none">1. Write your answers clearly in the spaces provided on the examination paper.2. Create a folder with your Index No. (eg:COM xxxx)3. Create 4 sub folders with the name of the question number (Q01, Q02, Q03, Q04)4. Fasten any supplementary paper at the end of the examination paper.5. This paper should be handed over personally to the supervisor/ invigilator	01	
	02	
	03	
	04	
	Total	

Eastern University Sri Lanka
Faculty of Commerce and Management

Third Year, Second Semester Examination in Bachelor of Business Administration/ Bachelor of Business Administration (Specialization in Marketing Management)/ Bachelor of Business Administration (Specialization in Human Resource Management)/ Bachelor of Commerce/ Bachelor of Commerce (Specialization in Accounting and Finance) 2013/2014 (September 2016)
(Proper/ Repeat)

Com 3032 Statistical Software Applications in Business

Answer All Questions.

Time: 01

01. In a survey, respondents were asked to express their preference for the variable, V_1 : Outdoor activities (using a seven-point Likert scale (1 = Not at all preferred, 7 = Greatly preferred)). They were also asked to indicate the importance of the following variables on a seven-point scale (1 = Not at all important, 7 = Very important).

V_2 : Enjoying Nature

V_3 : Relating to the weather

V_4 : Living in harmony with the environment

V_5 : Exercising Regularly

V_6 : Meeting other people

The data obtained are given in the following.

ID. No.	V_1	V_2	V_3	V_4	V_5	V_6
R01	7	3	6	4	5	2
R02	1	1	1	2	1	2
R03	6	2	5	4	4	5
R04	4	3	4	6	3	2
R05	1	2	2	3	1	2
R06	6	3	5	4	6	2
R07	5	3	4	3	4	5
R08	6	4	5	4	5	1
R09	3	3	2	2	2	2
R10	2	4	2	6	2	2
R11	6	4	5	3	5	5
R12	2	3	1	4	2	1
R13	7	2	6	4	5	6
R14	4	6	4	5	3	3
R15	1	3	1	2	1	4

- a. Enter this data into a SPSS work sheet in an appropriate manner. Save the SPSS data file with name **Style 1** into the folder **Q 01**.
- b. Merge the SPSS data files named **Life Style Cases.sav** and **Life Style Variables.sav** with file created in (a) in an appropriate order. Save the merged file with name **Life Style 2** into the folder **Q 01**.
- c. Create a new variable by recoding the responses for the variable, "Gender (V_7)" using **Automated Recode**. Name the new variable as "N_Gender".

Create Numeric codes for the variable, "Location of residence (V_8)", using *Recode into different Variables*. Name the recoded new variable as "N_Location of Residence". Attach value labels to describe what each value in the new variable represents. Save the data file with the name **Life Style 3** into the folder **Q 01**. Use this data file to answer the following questions. (02 Marks)

Obtain descriptive statistics on the relevant variables and Complete the following tables. (10 marks)

	V_1	V_2	V_3	V_4	V_5	V_6
Mean						
Standard deviation						

	Downtown		Suburbs		Countryside	
	Mean	Standard deviation	Mean	Standard deviation	Mean	Standard deviation
V_1						
V_2						
V_3						
V_4						
V_5						
V_6						

	Male		Female	
	Mean	Standard deviation	Mean	Standard deviation
V_1				
V_2				
V_3				
V_4				
V_5				
V_6				

- f. Based on the measures in the above tables (obtained in part (e)), describe the extent of preference in terms (Not at all preferred to Greatly preferred), and extent of importance in terms (Not at all important to Very important) given by the respondents in the following table.

Variables	Extent given by the respondents					
	All	Male	Female	Downtown	Suburb	Countryside
Outdoor lifestyle (V ₁)						
Enjoying nature (V ₂)						
Relating to weather (V ₃)						
Living in harmony (V ₄)						
Exercising regularly (V ₅)						
Meeting other people (V ₆)						

- g. Conduct a cross tabulation of the preference for an outdoor lifestyle with location of residence of respondents. Does the data show any association?

.....

.....

.....

- h. Conduct a factor analysis (use Principal component method for extraction and Varimax method for rotation) for the variables V₂ to V₆ in the data file **Life Style 3**. Use the results of the analysis to answer the following questions.

i) Complete the following correlation matrix and interpret the results.

(03 Marks)

	V ₂	V ₃	V ₄	V ₅	V ₆
V ₂	1.00				
V ₃		1.00			
V ₄			1.00		
V ₅				1.00	
V ₆					1.00

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

ii) Is the data suitable for the factor analysis? Justify your answer.

(02 Marks)

.....

.....

.....

.....

.....

.....

.....

.....

.....

iii) How many factors have been extracted? Justify your answer.

(03 Marks)

.....

.....

.....

.....

.....

iv) What percentage of total variance explained by each extracted factor?

(02 Marks)

.....

.....

- v) Explain which variables belong to each factor. What would be appropriate labels for the extracted? Provide justification for your answer.

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

Save the SPSS output file obtained for question 01 with the name **Life Style 3** into the folder

(Total 4)

- 02 a. A study was conducted to compare the efficiency of two sales representatives, A and B. The number of units sold per day by A for 24 days and by B for 20 days was recorded and stored in the file **efficiency**. The researcher is of the view that there is no significant difference in their efficiency levels.

- i) What is the appropriate parametric statistical test to examine researcher's claim?

.....

- ii) State the null and alternative hypotheses for the test that you choose in part (i).

Null hypothesis:

.....

Alternative hypothesis:

.....

- iii) Conduct the test that you choose in part (i) at 0.05% level of significance. State the decision and your conclusion.

Statistical decision:

.....

.....

Conclusion:

.....
.....

- iv) Construct box plots for the number of units sold by A and B and compare the variances in sales between A and B. Also comment on the distributions of sales of A and B.

(03 Marks)

.....
.....
.....
.....
.....
.....
.....

Save the SPSS output file obtained for question Q2 with the name **efficiency** into the folder **Q 02**.

An oil company has introduced a new brand of gasoline in its outlets in three cities. However, they are not sure how the new brand is selling at the three places since there is a lot of difference in the driving habits of people in the three cities. The company selected 10 outlets in each city and monthly sales (in thousand of rupees) of these outlets were recorded. Data were analyzed using SPSS and the following results were obtained.

Test of Homogeneity of Variances

Monthly Sales

Levene Statistic	df1	df2	Sig.
4.389	2	27	0.020

ANOVA

Monthly Sales

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	100943.056	2	50471.528	9.257	0.000
Within Groups	147208.167	27	5452.154		
Total	248151.222	29			

- i) Is there evidence of a difference in the variance of the sales of the three cities? Clearly state the null and alternative hypotheses for the test and the conclusion of the test.

(04 Marks)

Null hypothesis:

.....

Alternative hypothesis:

.....

Statistical decision:

.....

.....

Conclusion:

.....

.....

- ii) Is there any evidence of a difference in the average monthly sales of the three cities? Clearly state the null and alternative hypotheses for the test and the conclusion of the test. (04)

Null hypothesis:

.....

Alternative hypothesis:

.....

Statistical decision:

.....

.....

Conclusion:

.....

.....

- iii) Is it necessary to perform a 'post hoc' test? Explain. (04)

.....

.....

.....

(Total 12)

03.

A researcher was interested in knowing whether the performance of companies belonging to the automobile sector is independent of the location of the company. He developed a measure of performance on a nominal scale: 1 = loss, 2 = breakeven, 3 = profit. The location of the firm was put in one of two categories: 1 = low and middle income countries, 2 = high income countries. The data on these variables, collected for 45 companies for a particular year were stored in the file 'company.sav'.

What is an appropriate chart to portray these data?

(01 Marks)

Construct the chart selected in part (a) and comment on the relationship between the variables, "performance of the company" and "location of the company".

(04 Marks)

What is the appropriate statistical test to perform for testing researcher's claim?

(01 Marks)

State the null and alternative hypotheses for the test that you chosen in part (c).

(02 Marks)

Null hypothesis:

Alternative hypothesis:

Conduct the test that you choose in part (c) at 5% level of significance. State the statistical decision and your conclusion.

(07 Marks)

Statistical decision:

Conclusion:

Save the SPSS output file obtained for question 03 with the name **company** into the folder **Q 03**.

(Total 15 Marks)

04. It is interested to investigate the relationship between size and age of a firm and its performance particular industry. Size was measured by the number of employees (in 100s) working in the firm, age measured by the number of years for which the firm has been operating and the performance measured by return on equity. A sample of 50 firms was selected at random. Data on these variables stored in the file 'relationship.sav'.

a. Identify the independent and dependent variables in the given data set. (02 M)

.....
.....

b. By performing the appropriate statistical analysis, state which independent variable/ variables have correlation with the dependent variable. Justify your answer. (04 M)

.....
.....
.....
.....

c. Perform the multiple regression analysis in an appropriate manner. Write down the multiple regression equation by using the variables' name mentioned. (04 M)

.....

d. Comment on the results in 'Model Summary'. (03 M)

.....
.....
.....
.....

e. Determine whether there is a significant relationship between the dependent and independent variables (validity of the model). Justify your answer.

(03 Marks)

.....

.....

.....

Determine whether each independent variable makes a significant contribution to the regression model at 5% level of significance. Justify your answer.

(04 Marks)

.....

.....

.....

On the basis of the above results state which independent variables to be included in this model.

.....

.....

Save the SPSS output file obtained for question 04 with the name **relationship** into the folder Q 04.

(Total 20 Marks)

Save the folders Q 01, Q 02, Q 03 and Q 04 into the folder named with your index number (MS/COM xxxx)