EASTERN UNIVERSITY, SRI LANKA

Faculty of Commerce and Management

Year, Second Semester Examination in Bachelor of Business Administration/ Bachelor of ss Administration (Specialization in Human Resource Management)/ Bachelor of commerce/ helor of commerce (Specialization in Accounting and Finance) 2014/2015 (August 2017) (Proper/ Repeat)

Com 3032 Statistical Software Applications in Business

TWO (02) HOURS

To be completed by the candidate:

Examination Index Number: .....

Instructions to Candidates	For Examiner's Use only	
	Question No	Marks
1. This paper has **05** questions in **12** pages.		
2. Answer **all the questions** in **two** hours.	**01**	
3. Write your answers clearly in the spaces provided on the examination paper.	**02**	
4. Create a folder with your Index No. (eg:COM xxxx)	**03**	
5. Create 3 sub folders with the name of the question number (Q01, Q02, Q03)	**04**	
6. This paper should be handed over personally to the supervisor/ invigilator	**05**	
	Total	

A study was conducted to examine whether any differences exist among four types of calls received by a business center in terms of average of length of time required to respond. The table given below shows the time required, in minutes, to respond to each telephone call for the day by certain types of calls.

Lengths of Telephone Calls			
Information	Sales	Service	Others
0.6	5.1	5.2	6.3
1.1	1.7	2.9	1.2
1.0	4.4	2.6	3.1
1.9	26.6	1.2	2.5
3.8	7.4	7.0	3.0
1.6	1.4	14.2	2.6
0.4	7.0	8.4	0.8
0.6	3.9	0.6	
2.2	3.1	26.7	
12.3	1.2	7.7	
4.2	1.9	4.8	
2.8	17.3	7.2	
1.4	7.8	2.7	
	4.3	3.4	
	3.4	13.3	
	1.3		
	2.0		

Enter this data into a SPSS work sheet in an appropriate manner to answer the following questions. Save the SPSS data file with name **Time** into the folder **Q 01**.

(05 Marks)

Construct box plots on the same scales for these four types of calls. **(04 Marks)**

Describe briefly the SPSS procedure you used to construct the above graph:

Describe the structure you see in your graph.

c. Obtain mean and standard deviation for length of calls by each type of call.

Describe briefly the SPSS procedure you used to obtain mean and standard deviat
telephone call by each type of call:

Complete the following table using the output you obtained.

Type of call	Mean	Standard deviation
Information		
Sales		
Service		
Other		

Which type of call appears to have the highest average length? Which has the low

Are the assumptions of normal distribution and equal variability for the one way analysis of variance satisfied for this data set? Explain your answer using the box plots constructed in part (b). **(02 Marks)**

Compute the natural logarithm of each data value using **"Compute Variable"** option under the **"Transform"** Menu in SPSS. Name the new computed variable as **L_Time** and save the data file with the same name **Time.** **(02 Marks)**

Construct box plots for these logarithms on the same scales for the four types of calls. **(02 Marks)**

Are the assumptions of normal distribution and equal variability better satisfied using logarithm than using the original data? Explain your answer.

Conduct analysis of variance for logarithms of the lengths of calls and complete the following tables using the output obtained. **(06 Marks)**

Test of Homogeneity of Variances

L_Time

Levene Statistic	df1	df2	Sig.

ANOVA

L_Time

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups					
Within Groups					
Total					

Is there any differences among these types of calls? Explain your answer quoting any relevant statistics from the above table completed by you.

h. Is it necessary to perform a **'Post Hoc Test'** to the given problem? Explain your ans

Summary the results of **'Post Hoc Test'**.

Save the SPSS output file obtained for question 01 with the name **Time** into the fold

02. In a study of attitudes towards other people smoking, the respondents were ask extent to which they agree with each of the following statements (Rating scores ra 100, where 1 represents "strongly disagree" and 100 represents "strongly agree").

I think smoking is acceptable.

I don't care if people smoke around me.

I don't think people should smoke in restaurants.

I think people should have the right to smoke.

I don't think people should smoke around food.

Conduct a factor analysis for the data stored in the file **Factor.sav** to identify dimensions of attitudes towards other people smoking. Use the results of the ana the following questions.

ii. Is sample size adequate? Explain your answer quoting any relevant statistics. **(04 Marks)**

iii. How many factors are most appropriate to identify with regard to attitudes towards other people smoking? Explain your answer quoting any relevant statistics. **(03 Marks)**

iv. Which items load onto which factors? Name them based on the items that load onto them. **(06 Marks)**

d. What is the explained variance for each of the extracted factors, and what is t explained variance for all extracted factors combined?

e. What is the statistic used to measure the reliability of a factor? Describe how yo this statistic using SPSS.

What is the reliability of each of the extracted factors with regard to attitudes toward smoking? Interpret it.

Save the SPSS output file obtained for question 02 with the name **Factor** into the f

03. Alfa Roofing and Siding Company sells roofing and siding products to home rep commercial contractors. The owner is interested in studying the effects several value of pebbles sold. The marketing manager is arguing that the company sh money on advertising, while a market researcher suggests it should focus on mak product more distinct from its competitors. The company has 26 marketing region it collected information on the following variables: volume of sales (in thous advertising Rupees (in thousands), number of active accounts, number of compe rating of market potential. The data are stored in columns 1 to 5 in the data edi **Sales.sav.**

a. Identify the independent and dependent variables to see the effect of given variables of pebbles sold?

b. Obtain Bivariate correlations between the variables. Complete the following table b output obtained and comment on the relationship between the variables.

Correlations

	Advertising rupees	Number of active accounts	Number of competitors	Ma
Sales volume				

Conduct a multiple regression analysis for the data stored in the file Sales.**sav** to p volume based on advertising rupees, number of accounts, number of competitors a market potential. Use the results of the analysis to answer the following questions.

c. Write down the predicting model for sales.

h. Which is the best predictor of sales? Explain your answer quoting any relevant statis

i. Describe the change occurred in sales due to one unit of change in number of active

Describe the change occurred in sales due to one unit of change in number of compe

j Are there any independent variables that should be dropped from the predicting mo in part (c)? If so, what are the variables should be dropped from the predicting mo your answer quoting any relevant statistics.

Save the SPSS output file obtained for question 03 with the name **Sales** into the fold

The following output was obtained using SPSS.

Do you own a car * Resident at university hostel or traveler Cross tabulation

			Resident at university hostel or Traveler		Total
			Resident at university hostel	Traveler	
Do you own a car	Yes	Count	6	72	78
		Expected Count	17.8	60.2	78.0
	No	Count	44	97	141
		Expected Count	32.2	108.8	141.0
Total		Count	50	169	219
		Expected Count	50.0	169.0	219.0

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	15.759[a]	1	.000
Likelihood Ratio	17.952	1	.000
Linear-by-Linear Association	17.952	1	.000
N of Valid Cases	219		

0 cells (0%) have expected count less than 5. The minimum expected count is 17.81.

Which statistical technique was used to obtain this output? **(01 Marks)**

What research question could be addressed using this output?

(02 Marks)

c. Interpret this output in terms of the research question you gave in question 3(b), ab

d. Describe how you would obtain the above output using SPSS.

(To

05. A researcher is interested in assessing the impact of a number of changes in a fac satisfaction of workers. Before the changes are implemented the researcher questionnaire to a sample of workers which measures their attitudes to their work an job satisfaction. The same questionnaire is distributed to the same group of worke after the workplace changes were implemented.

a. Which parametric statistical technique could the researcher use to see if workers' job levels had changed across the two time periods measured? Briefly justify your answ

b. What are the key values you would look for in the output? **(01 Marks)**

c. What assumptions should you check for when using the technique that you chose in question 5(a), above? **(03 Marks)**

d. What non-parametric technique could be used to explore this question? **(01 Mark)**

Describe how you would you perform the non-parametric technique mentioned in question 5 (d), above using SPSS. **(03 Marks)**

(Total Marks 08 Marks)

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