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 commerce/ Bachelor of commerce (Specialization in Accounting and Finance) 2010/2011 (May/June 2013) (Proper/Repeat)

Com 3032 Statistical Software Applications in Business

Answer All Questions

Time: 03 Hours

01. The data given below were collected randomly from the 25 members of a gym located in Colombo.

Identification Number	Gender	Age	Reason to go to Gym
01	M	21	Maintain fitness
02	F	44	Relaxation
03	F	19	Lose weight
04	F	27	Lose weight
05	M	57	Maintain fitness
06	F	27	Build strength
07	M	39	Lose weight
08	F	36	Maintain fitness
09	M	37	Maintain fitness
10	F	51	Build strength
11	F	24	Maintain fitness
12	F	29	Build strength
13	M	20	Maintain fitness
14	M	22	Lose weight
15	M	46	Lose weight
16	M	41	Build strength
17	F	25	Lose weight
18	F	46	Lose weight
19	M	30	Build strength
20	M	25	Maintain fitness
21	F	24	Relaxation
22	M	39	Lose weight
23	M	44	Relaxation
24	F	48	Relaxation
25	f	18	Lose weight

a) Using SPSS, create a data file for the above dataset. Save the SPSS data file with the name, **gym users_1**

b) Create Numeric codes for the nominal variable, "Gender", using ***Recode into Same Variables***. Then use "***values***" to show the meaning of the numbers

c) Create a new variable by recoding the responses for the variable, "Reason to go to Gym" using ***Automatic Recode***. Name the new variable as "RC_Reason"

d) Create a new age group variable which breaks the data into 4 groups as follows, by recoding the variable "Age" usir
Recode into different variable.

Age Group	Below 25	25 - 34	35-44	Above
Code	1	2	3	4

Name the recoded new variable as "RC_Age". Then use "***values***" to show the meaning of the numbers. Save the data file with the same name **gym users_1**.

e) Construct the frequency tables for the variables: "Gender", "RC_Age" and "Reasons to go to Gym". Complete th following tables using the frequency tables you obtained.

Gender

	Male	Female
Frequency		
Percentage		

RC_Age

	Below 25	25 -34	35 – 44	Above 44
Frequency				
Percentage				

Reasons to go to gym

	Build strength	Lose weight	Maintain fitness	Relaxation
Frequency				
Percentage				

The data for the following variables also collected from the above 25 members: "Time spending on cardiovascul equipment during the last visit" (in minutes), "Time spending on weight machines during the last visit" (in minute "Time spending on other actives during the last visit" (in minutes). The data were stored in Excel with the name, **Tir spent in gym**.

f) Import the above dataset stored in Excel with file name, **Time spent in gym**, into SPSS. Save the data file with t name, **gym users_2** in SPSS

g) Merge the file **gym users_2** with **gym users_1.** Save the merged file with name **gym users_1**.

i) Using the Compute command, compute the total time spent on the gym by the members during the last visit. Name the new computed variable as Totaltime. Save data file with the same name **gym users_1**.

j) Find the summary statistics for the variable Totaltime by Gender: Complete the following table from the output you got.

Gender	Mean	Standard deviation	Skewness	Kurtosis
Male				
Female				

Using the above measures, compare the distribution of totaltime for Males and Females.

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k) Construct the box plots for the variables, "Time spending on cardiovascular equipment during the last visit", "Time spending on weight machines during the last visit" and "Time spending on other actives during the last visit" in one chart. Copy and paste the output of box plots in a word document and save it with the file name **Question 1_Box Plot**. Compare the distribution of the three variables using the box plots

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l) Save the SPSS output file obtained for question 01 with the name **gym users_1** and spss data file **gym users_1** into the folder **Q 01**

(Total 35Marks)

2. A consumer products company wants to measure the effectiveness of different types of advertising media in the promotion of its products. Specifically, the company is interested in the effectiveness of radio advertising and newspaper advertising. The sales of the product (in thousands of rupees), the amount spent on radio advertising (in thousands of rupees), and the amount spent on news paper advertising (in thousands of rupees) during the last 22 months are recorded which are in the data file **Advertise.sav**

a) State the multiple regression model fitted for the data

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b) Interpret the meaning of the multiple coefficient of determination and adjusted R^2 for this problem.

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c) Determine whether there is a significant relationship between sales and the two independent variables (ra
advertising and news paper advertising).

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d) Determine whether each independent variable makes a significant contribution to the regression model.

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On the basis of these results indicate the independent variables to be included in this model.

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e) Interpret the meaning of the coefficients of the independent variables of the model.

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Save the SPSS output file obtained for question 02 with the name **Advertise** into the folder **Q 02**

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3. The quality control director for a clothing manufacturer wants to study the effect of machines on the breaking strength (in Kg) of wool serge material. 36 square-meter pieces were randomly assigned to three different machines for the experiment. The results of the experiment are recorded which are in the data file **Breakstr.sav**

a) Which parametric statistical technique could be used to determine the difference in effectiveness of machines on the breaking strength?

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b) State the null and alternative hypotheses to perform parametric statistical technique that you choose in part (a).

Nullhypothesis:.....

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Alternative hypothesis: .....

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c) Using the mean plot, state whether there are differences among machines on breaking strength.

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d) What statistical decision can be made at 0.05% level of significance? State your conclusion.

Statistical decision: .....

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Conclusion: .....

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e) If appropriate, do the Post-hoc analysis to examine the differences among machines and interpret the results of the Post-hoc analysis.

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f) What assumptions should you check for when using the technique that you choose in part (a)?

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g) If the assumption(s) you made in part (d) is/are not valid, what alternative method do you propose to perform analysis?

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

(Total 18Mar

04. The 219 full-time students of a university were surveyed to determine whether car ownership and residency related to each other. The survey data were analysed and the SPSS outputs were given below.

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		

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

a) State the null and alternative hypotheses for the above analysis

Null hypothesis: .....

Alternative hypothesis: .....

b) What statistical decision can be made at 1% level of significance? State your conclusion.

Statistical Decision: .....

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Conclusion: .....

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c) How do the results from the chi-square test compare to your interpretations based on the Crosstabulation table?

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

(Total 12M

05. A tire company wants to determine whether a new steel-belted radial tire lasts longer than the company's cu model. On 20 randomly selected cars, one of each type of tire is installed on the rear wheels and the cars are d until the tires wear out. The number of km until wear-out occurred is recorded and stored in the file **Tire.sav**. Per the Paired samples t-test to determine whether new steel-belted radial tire is superior.

a) Interpret the SPSS output titled ***Paired Samples Statistics***

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b) Interpret the SPSS output titled ***Paired Samples correlations***

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c) State the null and alternative hypotheses for the above problem.

Null hypothesis: .....

Alternative hypothesis: .....

d) What statistical decision can be made at 5% level of significance? State your conclusion.

Statistical decision: .....

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Conclusion: .....

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e) What assumptions should you check for when Performing paired samples t-test?

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f) If the assumption(s) you made in part (e) is/are not valid, what non-parametric technique do you propose to perform the analysis?

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Save the SPSS output file obtained for question 05 with the name **Tire** into the folder **Q 05**

(Total 15Marks)

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Save folders Q 01, Q 02, Q 03, Q 04, Q 05 in to the folder named with your index number (MS/COM xxxx)