

**JARAMOGI OGINGA ODINGA UNIVERSITY OF SCIENCE AND TECHNOLOGY**  
**SCHOOL OF INFORMATICS AND INNOVATIVE SYSTEMS**  
**UNIVERSITY EXAMINATION FOR THE DEGREE OF BACHELOR OF SCIENCE IN**  
**ACTUARAL SCIENCE**

**3<sup>RD</sup> YEAR 2<sup>ND</sup> SEMESTER 2016/2017 ACADEMIC YEAR**

**MAIN CAMPUS**

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**COURSE CODE: SCS 324**

**COURSE TITLE: STATISTICAL PACKAGE WITH SSP**

**EXAM VENUE: AUDITORIUM**

**STREAM: ACTUARAL SCIENCE**

**DATE: 18/04/2017**

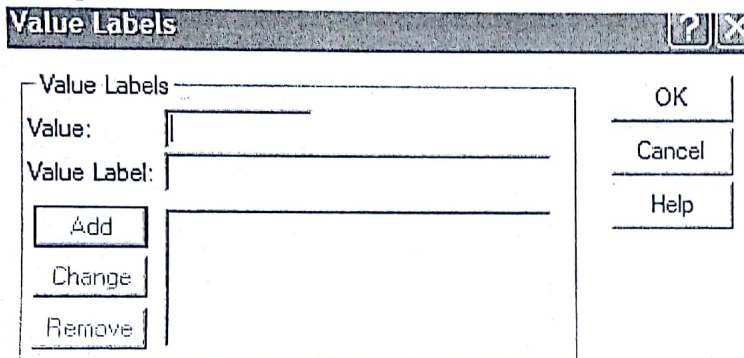
**EXAM SESSION: 2.00 – 4.00 PM**

**TIME: 2 HOURS**

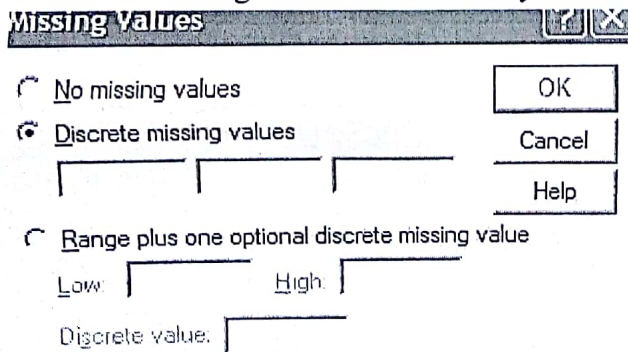
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**Question 1 [30 marks]**

- a) Define the following terms and give examples of each
  - i) Nominal variables (4 mark)
  - ii) Ordinal variables. (4 mark)
  - iii) Dummy variables (4 mark)
- b) What is the difference between quantitative (numeric) and qualitative (categorical) variables? (3 marks)
- c) What is SPSS? What is the name of the file extension? (5 marks)
- d) The figure below represents value labels in SPSS. Describe how you would assign unique number to each label if the variable is ordinal. Explain using an example. (6 marks)



- e) What are missing values and how do you handle missing values in SPSS. (4 marks)



**Question 2 [20 marks]**

You recently graduated from JOOUST with BSc in Actuarial Science. Your boss needs assistance with a survey shown below. Using this information answer the following questions



SAMPLE SURVEY

**Research Questions**

1. What kind of device do people prefer to own?
2. What color do people prefer for their device?
3. Is device color preference different between males and females?

**Survey Questions**

1. What is your name? \_\_\_\_\_
2. What is your sex? \_\_\_\_\_
3. What is your GPA? \_\_\_\_\_
4. What is your age?  
1. 19 or Younger    2. 20-23    3. 24-27    4. 28-31    5. 32 or Over
5. How much do you make in a month?  
1. Less than \$1000    2. \$1000-\$1499    3. \$1500-\$1999    4. \$2000-\$2499    5. Over \$2500
6. What is your class standing?  
1. Freshman    2. Sophomore    3. Junior    4. Senior    5. Graduate
7. What kind of device do you own?  
1. Tablet    2. Mac    3. PC    4. Smartphone    5. Other: \_\_\_\_\_
8. What color do you like to have for your device?  
1. Black    2. Silver    3. Navy Blue    4. White    5. Other: \_\_\_\_\_

- a) Code the data above using the table below that captures the "Name" and "Value" columns of the SPSS variable view. You must capture all variables in the questionnaire. DO NOT populate the data view. **(14 marks)**

No	Variable Name	Value Labels
1		
2		
3		
4		
....		

- b) Explain the statistical techniques you would perform in order to answer the following questions:
- i) What kind of device do people prefer to own? **(2 marks)**
  - ii) What color do people prefer for their devices? **(2 marks)**
  - iii) Is device color different between males and females? **(2 marks)**

**Question 3 [20 marks]**

You have been asked to conduct a study to determine the factors that affect the weight of students in an urban primary school. The school is concerned about the weight of some students which could result in health related issues. You perform a regression analysis in SPSS and obtain the results below. Answer the questions below:

**Model Summary**

Model	R	R Square	Adjusted R Square	Std Error of the Estimate
1	.980 <sup>a</sup>	.918	.917	1,200.3

a. Predictors (Constant), Age, HrsExercise, AmtChips, Height, AmtSoda

Coefficients <sup>a</sup>					
Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig
	B	Std Error	Beta		
1 (Constant)	0.54	302.45		1.432	.002
2 HrsExercise	-0.44	405.24	.664	1.567	.000
3. AmtChips	0.674	607.23	.720	3.234	.0001
4. Height	0.245	908.23	.122.45	0.332	.650
5. AmtSoda	-0.645	708.23	.322.45	0.332	.002
6. Age	-0.54	405.24	.664	1.567	.004

a. Dependent Variable: Weight

- Identify all the dependent and independent variables. **(5 marks)**
- Briefly discuss the significance of each of the following in the figures above **(5 marks)**
  - R
  - R Square
  - Adjusted R Square
  - B
  - Sig
- Write the linear equation model that captures the relationship between Weight and all the independent variables **(5 marks)**
- Using the linear equation generated above predict the weight of a child who eats 0.5 kg of chips and 0.5 liters of soda everyday **(6 marks)**

**Question 4 [20 marks]**

- Discuss the following concepts in SPSS
    - ANOVA
    - Regression Analysis **(2 marks)**
- (2 marks)**



iii) Correlation

iv) Cross Tabulation

(2 marks)

b) You have been asked to create a new data set of six people surveyed using the following set of questions. Use this information to complete the table below.

(2 marks)

(12 marks)

1. What are the last four digits of your phone number?
2. Do you exercise regularly? (Yes or No)
3. How many hours a week would you say you exercise?
4. Do you participate in team sports? (Yes or No)
5. What is your favorite sport to play?
6. Which year are you? (1<sup>st</sup> yr or 2<sup>nd</sup> yr or 3<sup>rd</sup> yr or 4<sup>th</sup> yr)

Variable Name	Type	Value Labels

**Question 5 [20 marks]**

a) Explain the importance of the following tests

i) Pearson Correlation Coefficient test

(3 marks)

ii) Chi-square test

(3 marks)

iii) Scedge test of equal variance

(3 marks)

iv) Wilcoxon-Mann-Whitney test

(3 marks)

b) What is a Chi-Square test? Discuss how you calculate Chi-Square test in SPSS.

(8 marks)