



KENYATTA UNIVERSITY

EXAMINATION FOR THE DEGREE OF BACHELOR OF SCIENCE IN COMPUTER
SCIENCE /MATHEMATICS AND COMPUTER SCIENCE AND INFORMATION
TECHNOLOGY

SCO 309: RESEARCH METHODS

2ND SEMESTER 2023/2024

TIME: 2 HOURS

INSTRUCTIONS:

1. Attempt Question **ONE** and any other **TWO** questions:

All questions attract equal marks

2. Total Marks = 70

3. Time = 2 hours
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Question One

- a) Define research question and explain four attributes (8 marks)
- b) A study want to find out if time one takes to study has any effect on performance. Which is the independent and dependent variable here? Explain (4 marks)
- c) Answer the following questions
- i) Differentiate between a study population and sample (2 marks)
 - ii) Describe a Research proposals: (2 marks)
 - iii) List any four qualitative research methods (4 marks)
- d) The contemporary lifestyle has result to a good number of people gaining unhealthy weight . Some of these try to get ways of cutting weight. Among the popular solutions are: to control their diet or to go for physical exercise. You want to determine which of the two methods is better in managing weight. Come with the null and alternative hypotheis for your study in terms of the fat loss (2 marks)
- e) Give differences among the following types of research: Descriptive, comparative, correlational and exploratory (8 marks)

Question Two

- a) Henry Hogson conducted an experiment in which he tested the theory that the intensity of social interaction among people increases if they are anxious. What type of study is this most likely to be? Explain your answer (4 marks)
- b) Elizabeth Onyango Kamau conducted a study of gambling establishments operated . She examined two establishments targeting soccer fans in university populations. During the study she spent many hours at each establishment and gained a detailed knowledge of the gambling entrepreneurs, gambling employees and gambling customers. She also investigated how the establishments were organized, their impact on economic development in the Kenya and how tribal members saw them.
- i) What type of study was this? (1 mark)
 - ii) Explain (i) above (4 mark)
 - iii) What data collection methods did Elizabeth likely use? Explain (15 marks)

Question Three

- a. A friend makes the following comment: "Persons who grew up with a much older sibling tend to treat the older sibling as a parent figure." What would you refer to such statement in research? Explain (3 marks)
- b. What is the role of the major theoretical frameworks in research? Use examples.(7 marks)
- c. Explain the qualities (components) of an abstract. (10 marks)

Question Four

Information systems provide a fact-based foundation to help achieve healthcare in organizational goals, viz: improve quality of service, reduce costs, extend access to care. A study was carried out to determine factors associated with prolonged length of stay in older patients. The following were the independent variables with associated p-values: Marital status (0.189), Place of residence (0.035), Type of housing (0.149), whether Living alone(0.002), Caregiver stress (0.0002), Required financial aid(0.005), Dementia (0.013).

From above scenario:

- a) Assume the significance of a variable in determining prolonged length of stay was determined by a p-value of less than 0.05, how many of the variables were significant and how many were not? (4 marks)
- b) Explain how you would analyse the data with Ms. Excel (5 marks)
- c) How would the p-values be if only one determinant was considered in the model, explain your answer. (5 marks)
- d) Again, if one determinant was considered, how would the following statistics be affected and why: Multiple R, R Square and Standard Error (10 marks)

Question Five

- a) As a researcher, discuss any TWO methods you use to Formulate a Research Problem (2 marks)
- b) A car manufacturer want to come up with a fuel efficient vehicle. To do so, they needed to ascertain what makes vehicles consume more fuel.. They hypothesized that *fuel consumption* was determined by the following variables: *Length, Width, and Weight*. Data was collected and recorded and regression was done after. Table 1 shows the regression results

Use this case and data provided to answer the questions that follow.

TABLE 1: SUMMARY
OUTPUT

Regression Statistics								
Multiple R	0.884088							
R Square	0.781612							
Adjusted R Square	0.757347							
Standard Error	3.161517							
Observations	31							
ANOVA								
					Significance			
	df	SS	MS	F	F			
Regression	3	965.8669	321.9556	32.21107	4.57E-09			
Residual	27	269.87	9.995187					
Total	30	1235.737						
		Standard				Upper	Lower	Upper
	Coefficients	Error	t Stat	P-value	Lower 95%	95%	95.0%	95.0%
Intercept	22.24829	14.90813	1.49236	0.147198	-8.34066	52.83724	-8.34066	52.83724
200.3	0.1868	0.0875	2.134862	0.042	0.007265	0.366334	0.007265	0.366334
69.9	-0.06893	0.246509	-0.27962	0.781899	-0.57472	0.436866	-0.57472	0.436866
3910	-0.0092	0.002076	-4.43211	0.00014	-0.01346	-0.00494	-0.01346	-0.00494

- From the case, deduce the independent and dependent variables (4 marks)
- Table 1 shows the output of regressing the data using MS EXCEL . Were all determinants hypothesized significant contributors to the dependent variable(s)? Explain your answer (4 marks)
- From your answer in (a) above, assume the model is a linear regression, come up with the proposed model (equation) to determine the fuel consumption (6 marks)
- From (c) above, assume the following figures are given: Length(200.5), width(72.5), weight(3695), what would be the fuel consumption? (4 marks)