



**FACULTY OF INFORMATION TECHNOLOGY  
BACHELOR OF INFORMATICS/BACHELOR OF TELECOMMUNICATIONS  
END OF SEMESTER EXAM**

**ICS 3203/BTC 3203: RESEARCH METHODS AND TECHNICAL WRITING**

**DATE: 13<sup>th</sup>. NOVEMBER 2018**

**Time: 2 Hours**

**Instructions**

1. This examination consists of **FIVE** questions.
2. Answer **SECTION A (COMPULSORY)** and any other **TWO** questions from **SECTION B**.

**SECTION A: The following question is compulsory**

**QUESTION 1: [20 marks]**

A laboratory experiment was carried out to investigate whether the time of day had an effect on memory. A group of 10 Faculty of Information Technology students were chosen to participate in this research by means of convenience sampling. They were given a memory test in the morning at 9 a.m. which involved them listening to a list of twenty objects that was read aloud. The participants then wrote down as many names of the objects that they could remember. Later that day, at 3 p.m., the same group were given the same memory test. The results supported the hypothesis, "*time of day affects memory recall*".

- a.) Define what is meant by the term '*laboratory experiment*'. [2 marks]
- b.) Explain **one advantage and two disadvantages** of a laboratory experiment. [3 marks]
- c.) Define what is meant by the term '*hypothesis*'. [1 mark]
- d.) Identify the **independent variable** (IV) in the above study. [1 mark]
- e.) Identify the **dependent variable** (DV) in the above study. [1 mark]
- f.) State an appropriate **Null hypothesis** for this study. [1 mark]
- g.) Define what is meant by the term '*operationalised*' in the context of a laboratory experiment. [1 mark]
- h.) Give **two advantages** of using *convenience* sampling. [2 marks]

- i.) Confounding/Extraneous variables are often a problem in research. **Identify one confounding variable** that may have affected results gained from this laboratory experiment. **Explain how** this confounding variable may have affected the results [2 marks]
- j.) State **one ethical issue** the researcher would have to consider in this study. [1 mark]
- k.) **Explain how** the researcher would have *to deal with this ethical issue* in this study. [2 marks]
- l.) Academic Research is defined as a process of collecting, analyzing and interpreting information to answer questions or solve a problem. But to qualify as good research, the process must have certain characteristics and properties. **Explain any three (3) characteristics** of research [3 marks]

## SECTION B: ANSWER ANY TWO QUESTIONS FROM THIS SECTION

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### QUESTION 2: [20 marks]

A lecturer was testing false memories in a class of FIT students. He used half the class as participants in his study. The other half provided true stories about events at campus. He used two of these true stories and one false story. Each participant read all three stories. The lecturer told them the events were from their campus days and that he was studying campus friendships. One month later he asked them to recall the events.

- a.) Identify the **dependent variable** in this experiment and suggest how it could be **operationalised**. [2 marks]
- b.) Name the **ethical guideline that the lecturer broke** by telling the participants he was investigating campus friendships. [1 mark]
- c.) Explain **4 reasons** why it was important that the lecturer broke the ethical guideline that you have identified in part (b). [4 marks]
- d.) Give **3 reasons** why waiting a month before testing the participants could be a problem. [3 marks]
- e.) In research, a theory is used to explain and predict the relationship between variables. One popular theory in the field of Information Systems is the TAM theory. What is the full name of TAM? [1 mark]
- f.) List the **constructs** that make up the TAM theory .(*You may draw the framework*) [3 marks]
- g.) Give the **in-text citation** and **full reference** for the following resources. [6 marks]
  - i. Author(s): John P. Ackran  
Date of Publication: September 21, 2017  
Title of webpage: Statistics of Insurance Coverage of University Students  
Sponsoring Organization: Organization for Student Reform  
Date of Access: November 3, 2018  
URL: <http://www.medreform.org/statistics/insurance/student-coverage/233>
  - ii. Article Title: Truly, Madly, Depp-ly  
Author: Frank DeCaro  
Publication: Advocate  
Volume number: 906  
Date: January 20, 2004  
Pages: 76-77  
Source: Gender Studies Database  
Date of access: October 31, 2008  
hyperlink: <<http://0-search.ebscohost.com/maurice.bgsu.edu/>

iii.



### QUESTION 3: [20 marks]

Two students, Nicole and Caroline, are researching about the kinds of exercises that people do. They are using a questionnaire with 10 questions. Both students are worried about reliability in their investigation.

- a.) Write **one open ended and one closed ended question** that Nicole and Caroline could ask. [2 marks]
- b.) Tabitha has a younger sister who is scared of shoe laces. Tabitha has decided to watch her sister in the school playground. She wants to observe how her sister responds to other people. She decides to conduct *a controlled observation* using two of her friends, one wearing shoes with laces and one wearing shoes without laces. She has asked her friends to walk around the playground separately. *Describe how Tabitha could conduct her observation* of her sister's responses. [10 marks]
- c.) Define the term '*triangulation*'. [1 mark]
- d.) Describe any **four major types of triangulation** that are used in qualitative research [4 marks]
- e.) What is the main *purpose of triangulation* in research? [1 mark]
- f.) List 4 reasons why is *research important/of value* to mankind? [2 marks]

**QUESTION 4: [20 marks]**

- (a) You are given a random list of all graduating undergraduate students at Strathmore University. You decide to survey every five names on the list and ask what types of activities they participated in while they were at the university. This is an example of \_\_\_\_\_ sampling.
- A. Random.
  - B. Stratified.
  - C. Cluster.
  - D. Systematic.
- (b) You wish to do a comparison study between two hospitals' success rates. Instead of assigning patients to go to one or the other, you divide your sample into two groups and randomly sample based upon which hospital individuals attend for treatment. Which type of sampling are you using?
- A. Random.
  - B. Stratified.
  - C. Cluster.
  - D. Systematic.
- (c) You wish to examine the effects of socio-economic status on diet. You can randomly sample all of the people that work or are patients at a local hospital for the study. You are concerned about the unequal number in your sample with higher socio-economic status, while not representing the lower socio-economic groups as proportionately. How would you sample to control for this problem?
- A. Random.
  - B. Stratified.
  - C. Cluster.
  - D. Systematic.
- (d) You go to T-MALL mall next weekend to study how people spend their money. You ask all by-passers to participate. Which type of bias does this procedure illustrate?
- A. Convenience.
  - B. Purposive.
  - C. Quota.
  - D. Demographic.
  - E. No bias is present.
- (e) Which of the following is an example of qualitative sampling technique?
- A. Cluster.
  - B. Purposive.
  - C. Stratified.
  - D. Systematic.
- (f) Which one of the following is one type of random sampling?
- A. Quota.
  - B. Systematic.
  - C. Convenience.
  - D. Purposive.

- (g) When it is not possible to list all members of a population, researchers often use which of the following type of sampling?
- A. Simple random.
  - B. Systematic.
  - C. Stratified.
  - D. Quota.
- (h) Principal Ted's school has 2,000 children. He wants to obtain information from parents regarding school homework policies in order to make decisions about future school policy. Principal Ted takes a numbered list of all students in the school and randomly selects a sample to participate. Which sampling technique does this illustrate?
- A. Systematic.
  - B. Random.
  - C. Cluster.
  - D. Stratified.
- (i) Principal Ted wants to be sure he has a proportionate sample of parents based upon the class level of their children. Which sampling method should she consider using?
- A. Systematic.
  - B. Random.
  - C. Cluster.
  - D. Stratified.
- (i) Principal Ted decides he will send out surveys to the entire school and then will analyze the first 200 responses. In this case he is illustrating which of the following types of sampling?
- A. Convenience.
  - B. Traditional.
  - C. Quota.
  - D. Purposive.
- (j) Principal Ted has decided to consider changes to his policy because the Parents Teachers Association (PTA) president suggested some parents had concerns about the current policy. He leaves a stack of surveys at the main office desk and as parents come to pick up their children, volunteer, or as they enter the school on any other business he asks them to take the time to complete the survey. Which of the following does this strategy illustrate?
- A. Purposive.
  - B. Intentional.
  - C. Convenience.
  - D. Quota.
- (k) Which type of research is Principal Meyer conducting?
- A. Basic.
  - B. Applied.
  - C. Evaluation.
  - D. Correlational.
  - E. None of the above.

- (l) Given the general guidelines presented in your text and his population, which of the following represents an approximate sample size she should collect?
- A. 20-50.
  - B. 100-200.
  - C. 300-400.
  - D. 1500-2000.
- (m) The target population in his study is
- A. Children in his school.
  - B. Parents of children in his school.
  - C. Primary school children in his county.
  - D. Parents of primary school children in the country.
- (n) Suppose Principal Ted decides to approach his study differently. He identifies children as either those involved in extra-curricular activities or those not involved in extra-curricular activities. He samples about 20 parents of children from each group and collects data with a short interview. Which of the following best illustrates the sampling technique he is using?
- A. Homogeneous.
  - B. Intensity.
  - C. Snowball.
  - D. Criterion.
- (o) Principal Ted decides to do phone interviews. He selects a few parents to start with and at the end of his brief interview he asks if the participant knows anyone else that might want to have input into his decision. He then lists those names and contacts them to participate. In this case, which type of sampling is he illustrating?
- A. Homogeneous.
  - B. Intensity.
  - C. Criterion.
  - D. Snowball.
- (p) Claudine studies the experiences of African women enrolled in American universities. She selects a sample of eight single women from African countries who traveled to the United States for study. Which type of sampling does this illustrate?
- A. Homegeneous.
  - B. Intensity.
  - C. Snowball.
  - D. Cluster.
- (q) Claudine's study is an example of
- A. Quantitative research.
  - B. Qualitative research.
  - C. Basic research.
  - D. Evaluative research.

(r ) Education researchers ultimately want the answer to a research question to pertain to the

- A. Sample.
- B. Accessible population.
- C. Target population.
- D. World.

(s) The best sample is one that is

- A. Selected at random.
- B. Convenient.
- C. Purposefully selected.
- D. Representative of the population.

(t) Population generalizability refers to

- A. Conclusions researchers make about a random sample.
- B. Conclusions researchers make about information uncovered in a research study.
- C. The degree to which a sample represents the population of interest.
- D. The degree to which results of a study can be extended to other settings or conditions.



**QUESTION 5: [20 marks]**

- a.) An abstract is a summary of a longer piece of academic work. It explains the main elements of the academic paper. Identify the **type** of abstract below. [1 mark]

***The Impact of Ethics Education***

*The participants were 30 volunteer students, 15 male and 15 female who have recently graduated from the School of Humanities of Strathmore University. The participants were asked what influence the various ethics units taught in their course has on their attitudes regarding professionalism in the workplace. The results indicated that ethics education has some positive impacts on attitudes of the students regarding professionalism in the workplace. □The responses of the participants indicated that, at the end of four year BBIT program, they have more self- awareness and have greater capacity to identify work place ethics and how to deal with ethical dilemmas in the workplace. The aim of this study was to examine whether ethics education has any impacts on attitudes in terms of professionalism and ethical work practices. □In addition, they reported they had the feeling that they could contribute to making the workplace a more ethical place. Ethics has always been a beneficial discipline for the human beings.*

- b.) Identify the components (**Background, Aims, Methods, Results, Conclusion, and Keywords**) of the abstract above. [6 marks]
- c.) For each research scenario below, determine which survey format(s) – *mail survey, internet survey, telephone survey, or interview* – would be most appropriate [4 marks]

Research scenario	Survey format
i. A researcher wants to ensure respondents complete anonymity and to avoid any bias that might result from the interaction between respondent and researcher.	
ii. A researcher wants to increase response rates and to adjust the wording of survey questions depending on how the respondent understands the questions.	
iii. A researcher wants the maximum response rate but might need to provide the respondents with visual images to explain questions.	
iv. A researcher wants to reach respondents from different nations and to provide respondents surveys written in the language with which they are most comfortable.	

- d.) A researcher carried out a quasi-experimental study to investigate if there is a difference in job satisfaction levels depending on working environment. He looked specifically at whether there was a difference between office workers who had their own personal desk and those that had to ‘hot desk,’ i.e. had no particular desks and shared all desks with others. He approached two separate companies – one that used ‘hot desking’ and one where people had their own personal desk – who agreed to the researcher interviewing a random sample of employees. A structured interview was used where each employee was rated on how much they enjoyed their job using a scale from 1 to 10, with 10 indicating high job satisfaction. The results from the study are shown in the table below.

<b>Job Satisfaction Rating</b>	<b>Frequency (tally) from Hot Desking Office</b>	<b>Frequency (tally) from Personal Desk Office</b>
1	2	0
2	3	2
3	3	2
4	3	4
5	10	8
6	6	8
7	4	8
8	4	0
9	10	0
10	0	0
<b>Median Rating</b>	<b>5</b>	<b>5.5</b>
<b>Range</b>	<b>9</b>	<b>6</b>

*The table above shows the frequency of job satisfaction ratings and median ratings for employees working in a hot desking office and employees working in an office with personal desks.*

- Explain** how the **median** is calculated. [2 marks]
- Calculate the **mean** for the “Hot Desking” and the mean for the “Personal Desk”. [2marks]
- Draw a **line graph** to show the distribution of the frequency of ratings for the hot desking office. [4 marks]
- Explain what is meant by a “*quasi -experiment*”. [1 mark]