



SCHOOL OF COMPUTING AND ENGINEERING SCIENCES
BACHELOR OF COMPUTER NETWORKS AND CYBER SECURITY
CNS 3203: RESEARCH METHODOLOGY AND TECHNICAL WRITING
END OF SEMESTER EXAM

DATE: 5th December, 2023

Time: 15.30 - 17.30

Instructions

1. This examination consists of **FOUR** questions.
2. Answer Question **ONE (COMPULSORY)** and any other **TWO** questions.

Question 1 (30 Marks)

- (a) Briefly explain the following terms in the context of research methodology:
- | | |
|---------------------------|-------------|
| (i) Scientific research | (1.5 marks) |
| (ii) Research methodology | (1.5 marks) |
| (iii) Research design | (1.5 marks) |
| (iv) Inductive research | (1.5 marks) |
| (v) Independent Variable | (1.5 marks) |
| (vi) Literature review | (1.5 marks) |
- (b) Briefly describe **three** characteristics of a good research hypothesis. (4.5 marks)
- (c) Highlight stages of the sampling process. (6 marks)
- (d) Distinguish between the 'reliability' and 'validity' of a research. (4 marks)
- (e) Triangulation in research involves the use of more than one method to collect data for the same research topic or study.
- | | |
|---|-------------|
| (i) State two reasons why triangulation is important in research. | (2 marks) |
| (ii) Briefly explain three types of triangulation. | (4.5 marks) |

Question 2 (15 Marks)

Information Technology (IT); both basic concepts and emerging trends have revolutionized research. Discuss the influence, effect or role of IT in a research process highlighting the tech-enabled procedures, tools and challenges associated with technology-facilitated research.

(15 Marks)

Question 3 (15 Marks)

a). Discuss **three** emerging trends in IT explaining what it is about and how each of the trends is applied in research and its processes. (9 Marks)

- (b) Dissemination of research findings is an important aspect of a research process. Considering that not all beneficiaries of research findings belong to academia or various scientific fields, there is a need for researchers and academics to learn how to write for non-academics or different scientific audiences. Explain what research dissemination is and give 5 specific reasons why you need to learn how to write and share research output with non-academics. (6 Marks)

Question 4 (15 Marks)

“Research and Innovation is one of our strategic pillars as a university. Strathmore University is considered to be a center of excellence in teaching and research. We wish to enhance this by providing facilities and support for innovative research and extension services. We want to provide a conducive environment for the continuous education and improvement of staff in their academic and professional careers. We aim to forge academic partnerships and links with other academic institutions, the professions, industry and commerce and to be at the forefront of technological innovation and its specific application within the local context.”

Adapted from <https://research.strathmore.edu/>

- a) Illustrate the role of research in the university’s day to day running and decision-making process to meet its goals. (5 Marks)
- (b) Study the excerpt below and answer the questions that follow

Status of Drugs and Substance Use among Secondary School Students in Kenya

Early initiation of substance use increases the risk of future substance use disorders and other negative outcomes. This study conducted between March and June 2016 explored the secondary students' drugs and substance use behaviour and related risk factors. Using a sampling frame of schools registered with Kenya's Ministry of Education, Science and Technology, 77 secondary schools were randomly sampled. 3,908 students (60% male and 40% female) from all the 47 counties in Kenya were interviewed. According to the study findings, the age of initiating the different drugs and substances of abuse among secondary school students was 13 to 15 years. The data also showed that alcohol was the most commonly abused substance at (23.4%), followed by khat/miraa (17.0%), prescription drugs (16.1%), tobacco (14.5%), bhang / marijuana (7.5%), inhalants (2.3%), heroin (1.2%), and cocaine (1.1%) respectively. Among the risk factors associated with drugs and substances of abuse among secondary school students were: being male; being in upper classes; having a family member or friend using drugs or other substances of abuse; and knowledge of a schoolmate using drugs or other substances of abuse.

Draft a sample questionnaire with **five** questions that would be used for the same (above) study.

(10 Marks)