Strathmore
UNIVERSITY

FACULTY OF INFORMATION TECHNOLOGY
BACHELOR OF SCIENCE IN INFORMATICS AND COMPUTER SCIENCE / BACHELOR OF TELECOMMUNICATIONS
END OF SEMESTER EXAMINATION
ICS 3205 - Research methods and technical writing - November 2019

DATE: 15th November 2019   Time: 2 Hours

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

QUESTION ONE (COMPULSORY) (30 Marks)
Time-tabling in educational institutions is one of the most crucial activities for the set-off of the school term. A timetable clearly defines what activities will be done and at what particular times; and therefore turns out to be the main tool of organization and systematic advancement of the institution's activities. Institutions in this country, specifically Kiambu Road University being the case study, have a huge number of students and a high number of courses to be offered compared to the number of available classrooms. This makes timetabling scheduling difficult. Due to this complexity, time-tablers resort to carrying forward timetables of previous terms and design current timetables manually. This is associated with many drawbacks such as errors being carried forward from previous timetables and classroom clashes. Time tabling is very time consuming and does not allow the time-tablers to beat the timetable deadline as required by the institution, leading to delay in lecture kick off. From the analysis done, there is need to design an automated timetabling system to deal with the weaknesses seen in the manual system.
As a researcher for this project, you are expected to do the following.
   a) Identify and justify the type of research you would conduct for this study **(2 marks)**
   b) Identify a suitable topic for this study   **(2 marks)**
   c) Phrase a problem statement for the study   **(3 marks)**
   d) State the main objective of this study   **(2 marks)**
   e) Many scholars advise that research objectives should be "SMART". Using suitable examples for this study, briefly explain the meaning of having SMART research objectives   **(7 marks)**
   f) Differentiate between the theoretical and geographical scope of this study **(4 marks)**
   g) Suggest the most appropriate data collection method for this study and gives reasons to support your choice.   **(4 marks)**
   h) How significant will the results of this study be to the various stake holders of this study? Clearly identify who will benefit and how they will benefit   **(3 marks)**
   i) What will be the importance of reviewing Literature related to this study? **(3 marks)**

QUESTION TWO (15 Marks)

Following the recently concluded population census, the Kenya Bureau of Statistics reported on their "population clock" that the population of Kenya was 44,683,456 people. The Ministry of Education conducted a survey titled "Reading at Risk", on the reading habits of approximately 17,000 adults. Of those surveyed, only 57% had read a book in 2014.

  a) What is the population under investigation?   **(1 mark)**
  b) What is the parameter of interest?   **(1 mark)**
  c) What is the sample?   **(1 mark)**
  d) If this investigation was to be carried out using hypotheses, using appropriate examples, differentiate between the two types of hypotheses that would be tested.   **(6 marks)**
  e) If the survey involved use of a questionnaire with open ended questions,
      i.   Explain two advantages and two disadvantages of using a questionnaire in research.   **(4 marks)**
      ii. Define what is meant by the term *'open ended questions'*.   (**2marks**)

QUESTION THREE (15 Marks)

The block of text below has been extracted from page 8 of the book titled "Making Smart IT Choices", Second Edition. This book was written by the following authors: Sharon Dawes, Theresa Pardo, Stephanie Simon, Anthony Cresswell, Mark LaVigne, David Andersen, and Peter Bloniarz in April 2004. It was published by the Center for Technology in Government, located at Albany University.

> *"Expert observers of IT trends say organizations waste time, money, and credibility on IT because of a few fatal mistakes. They either buy the wrong technology for the job, or they buy the right technology but do not implement it effectively."*

  a) Clearly distinguish between a citation, and reference   **(2 marks)**
  b) Differentiate between APA referencing style and IEEE referencing style   **(2 marks)**

  c) Assume you are going to cite the text above in your research proposal.
      i.   How would you reference the text using APA style?   **(2 marks)**
      ii. Use the APA style to format information about the book as an entry in the reference list in your research proposal.   **(2 marks)**
      iii. Using IEEE referencing style, illustrate how you would include the entry in your reference list.   **(3 marks)**
  d) When conducting research, you must maintain ethical standards as a researcher. Consider the following and identify the type of ethical violation in each.   **(4 marks)**
      i.   A shopkeeper cleverly changes the "sell by" or expiry date on food items so they can be kept longer on the shelf
      ii. A student has not studied for his examination and copies the writing of his neighbour in the exam hall when no-one is looking.
      iii. A professor is on the selection committee for a scholarship for which her nephew is applying.
      iv. A researcher invents data for an experiment without actually conducting that experiment.

QUESTION FOUR (15 Marks)

There is a rumour that doctors in government hospitals are smuggling drugs into their own private hospitals/clinics/pharmacies. If you are the new research director in Ministry of Health, and you

have been tasked to carry out an investigation about this matter. Assume you **choose** the survey research method.

   a) Which sampling method would be appropriate for selecting a sample of doctors that will participate in your investigation? With a definition of the selected sampling method, justify your answer (5 marks).

   b) Explain the steps you would take while using the sampling method chosen in (a) above. (4 marks)

   c) Using examples, discuss any two data collection techniques and corresponding data collection instruments that will be appropriate for use in this investigation (6 marks).

QUESTION FIVE (15 Marks)

   a) Processing of data implies editing, coding, classification and tabulation. Describe these four operations pointing out the significance of each in context of research study. (8 marks)

   b) A student recorded her score on weekly research methodology quizzes that were marked out of 10 points. Her scores were as follows: [8, 5, 8, 5, 7, 6, 7, 7, 5, 7, 5, 5, 6, 9, 8, 9, 7, 9, 6, 8, 6, 6, 7]

   i.   Compute the central tendency for this data set using the example of measures of central tendency (3 marks)

   ii.   Compute the level of dispersion in this data set using the example of measures of dispersion (3 marks)

   iii. What conclusion can you draw about the data set in (b) above after computing the central tendency and dispersion? (1 mark)

SUCCESS!