(Knowledge for Development)

KIBABII UNIVERSITY
(KIBU)

UNIVERSITY EXAMINATIONS
2020/2021 ACADEMIC YEAR

END OF SEMESTER EXAMINATIONS
YEAR TWO SEMESTER TWO EXAMINATIONS

FOR THE DEGREE OF
(INFORMATION TECHNOLOGY)

COURSE CODE : BIT 224

COURSE TITLE : RESEARCH METHODS AND TECHNICAL WRITING IN COMPUTING

DATE: 12/10/2021   **TIME: 9.00 A.M. – 11.00 A.M.**

INSTRUCTIONS TO CANDIDATES

ANSWER QUESTIONS ONE AND ANY OTHER TWO.

QUESTION ONE (COMPULSORY)   [30 MARKS]

a. Explain the meaning of Research and give **FOUR** justifications why people carry out research.

[5 marks]

b. Research design is a glue that holds the content of the research together. Outline and discuss various types of research design

[10 Marks]

c. Read the extract below and answer the questions that follow.

Since the 1990s, the world has seen significant changes in the landscape of education as a result of the ever-expanding influence of technology. One such development is the adoption of online learning across different learning contexts, whether formal or informal, academic and non-academic, and residential or remotely. We began to witness schools, teachers, and students increasingly adopt e-learning technologies that allow teachers to deliver instruction interactively, share resources seamlessly, and facilitate student collaboration and interaction (Elaish et al., 2019; Garcia et al., 2018). Although the efficacy of online learning has long been acknowledged by the education community (Barrot, 2020, 2021; Cavanaugh et al., 2009; Kebritchi et al., 2017; Tallent-Runnels et al., 2006; Wallace, 2003), evidence on the challenges in its implementation continues to build up (e.g., Boelens et al., 2017; Rasheed et al., 2020).

Recently, the education system has faced an unprecedented health crisis (i.e., COVID-19 pandemic) that has shaken up its foundation. Thus, various governments across the globe have launched a crisis response to mitigate the adverse impact of the pandemic on education. This response includes, but is not limited to, curriculum revisions, provision for technological resources and infrastructure, shifts in the academic calendar, and policies on instructional delivery and assessment. Inevitably, these developments compelled educational institutions to migrate to full online learning until face-to-face instruction is allowed. The current circumstance is unique as it could aggravate the challenges experienced during online learning due to restrictions in movement and health protocols (Gonzales et al., 2020; Kapasia et al., 2020). Given today's uncertainties, it is vital to gain a nuanced understanding of students' online learning experience in times of the COVID-19 pandemic. To date, many studies have investigated this area with a focus on students' mental health (Copeland et al., 2021; Fawaz et al., 2021), home learning (Suryaman et al., 2020), self-regulation (Carter et al., 2020), virtual learning environment (Almaiah et al., 2020; Hew et al., 2020; Tang et al., 2020), and students' overall learning experience (e.g., Adarkwah, 2021; Day et al., 2021; Khalil et al., 2020; Singh et al., 2020). There are two key differences that set the current study apart from the previous studies. First, it sheds light on the direct impact of the pandemic on the challenges that students experience in an online learning space. Second, the current study explores students' coping strategies in this new learning setup. Addressing these areas would shed light on the extent of challenges that students experience in a full online learning space, particularly within the context of the pandemic. Meanwhile, our nuanced understanding of the strategies that students use to overcome their challenges would provide relevant information to school administrators and teachers to better support the online learning needs of students. This information would also be critical in revisiting the typology of strategies in an online learning environment.

Required:

i. Formulate a research problem based on the above scenario.   [2 marks]

ii.   State any TWO objectives you will pursue in this study.   [2 marks]

iii.   If you were to carry out this research /study, which research tools and techniques are you likely to employ?   [4 marks]

iv.   Explain the referencing style used in the extract.   [2 marks]

v.   If you were the researcher tasked to carry out this study, describe the main steps you would follow.   [5 marks]

QUESTION TWO   [20 MARKS]

a.   Research ideas come from one or more sources. Explain briefly any **FIVE** sources of research ideas.   [5 Marks]

b.   Explain why literature review is an important aspect in a research work.   [5 Marks]

c.   A student presented a study titled: *An Algorithm for optimized Resources usage in Multi-Users Cloud Computing Environment*

Required:

i.   State the solution domain and problem domain as depicted on the title.   [2 Marks]

ii.   Identify the dependent and independent variable and conceptualize the study   [4 Marks]

iii.   With justification, explain the research design that will be employed in this study.   [4 Marks]

QUESTION THREE   [20 MARKS]

a.   Explain the meaning of the following terms and concepts as used in the study of research methods:

i.   Target population   [2 Marks]

ii.   Sample frame   [2 Marks]

iii.   Sample   [2 Marks]

iv.   Sampling techniques   [2 Marks]

b.   You are pursuing a study titled "*A framework for adopting e-payment systems for small and medium enterprises in Bungoma*"

i.   State the target population of the study, sample frame and how you will derive the sample for the study.   [4 Marks]

ii.   Explain how you will ensure the credibility of the data collection tools and the findings of this study.   [8 Marks]

QUESTION FOUR [20 MARKS]

a. Explain why sampling is an important activity in research. [4 marks]

b. Differentiate between probabilistic and non-probabilistic sampling techniques. [4 marks]

c. Explain any **FOUR** probabilistic and **FOUR** non-probabilistic sampling techniques. [12 marks]

QUESTION FIVE [20 MARKS]

a. In a presentation of a research proposal, a student was advised to make his objective **SMART**. Explain the implication of this phrase in relation to research work. [6 marks]

b. Differentiate between ordinal scale and nominal scale as used data representation. [4 marks]

c. Explain the following concepts [6 marks]

 i. Ethnographic study

 ii. Longitudinal study

 iii. Software walkthrough

d. Discuss any **TWO** vices that are condemned in research activities and why research ethics is required. [4 marks]