JARAMOGI OGINGA ODINGA UNIVERSITY OF SCIENCE AND TECHNOLOGY

SCHOOL OF INFORMATICS AND INNOVATIVE SYSTEMS

UNIVERSITY EXAMINATION FOR THE DEGREE OF DOCTOR OF PHILOSOPHY

IN IT SECURITY AND AUDIT

1ST YEAR 1ST SEMESTER 2018/2019 ACADEMIC YEAR

KISUMU CAMPUS

COURSE CODE: IIT 6112

COURSE TITLE: RESEARCH DESIGN

EXAM VENUE: **STREAM: IT SECURITY**

DATE: 14/08/19   **EXAM SESSION: 9.00 – 12.00NOON**

TIME: 2.00 HOURS

INSTRUCTIONS

1. **Answer THREE questions**
2. **QUESTION 1 is compulsory**
3. **Candidates are advised not to write on the question paper**
4. **Candidates must hand in their answer booklets to the invigilator while in the examination room**

QUESTION 1 [20 MARKS]

You have been consulted by a private multinational fortune 500 organization to assist with research work on specific project. Below is a summary of a brief statement from the organization. "Decision making by stakeholders in the agricultural value chain is a complex process with many sources of information which can be overwhelming, intimidating and very confusing. Providing access to information using emerging technologies such as IoT, big data and Artificial Intelligence, is important in enhancing the decision-making capabilities of the value chain stakeholders. Emerging technologies provide value chain stakeholders with opportunities for data capturing, data cleaning, data storage and data sharing and learning, for more productivity, for assistance with decision making, and for increased profitability. This project will investigate the role of emerging technologies in the promotion of precision farming to enhance agricultural productivity and thus enhance food security in sub-Saharan Africa.

Your role is to answer the following questions
a) Identify the research problem **(2 marks)**
b) State the main research objective of this study **(2 marks)**
c) State any one research objective **(2 marks)**
d) Identify the research design you would adopt for this study and provide a
   justification **(2 marks)**
e) Identify the research philosophy that informed your choice of the research
   design above. **(2 marks)**
f) Explan the rationale for choosing this philosophical approach **(3 marks)**
g) Briefly discuss any two data analysis techniques you would employ for this
   study. **(4 marks)**
h) Identify any research instrument you would use in this study. **(3 marks)**

QUESTION 2 [20 MARKS]

All doctoral students in JOOUST are expected to write a thesis depicting their contribution to the body of knowledge at the end of their program. Research trends in IT Security have focused on either design research (artifacts) or analytical (empirical or behavioral). Using an illustration discuss the stages of research in both design research (R&D) and (analytical or behavioral) research in IT.

a) Research and development research **(10 marks)**
b) Analytical/behavioral research (10 **marks)**

QUESTION 3 [20 MARKS]

A postgraduate student has approached you for assistance with a proposal. The title of the proposal is "Investigating factors affecting privacy of public data in government Integrated Information Systems". The students intend to use non-experimental research design, and more specifically descriptive research method. The student also plans to use descriptive statistics and correlation data analysis in chapter 4.

a) Advice the student appropriately in regard to the choice of methodology and data analysis (do not discuss general issues regarding methodology and data analysis, but instead your response should point to the students work). **(12 marks)**

b) Suppose the student insist on using either descriptive or correlation research method, propose two new titles for the proposal based on the choice of the research method. Provide a rationale for your choice of title.
   i) Descriptive research method **(4 marks)**
   ii) Correlation research method **(4 marks)**

QUESTION 4 [20 MARKS]

a) Many researchers have advocated for mixed methods research which combines qualitative and quantitative methods in ways that draw on the strengths of both traditions of inquiry and hence overcome problems associated with certain research inquiry. Discuss five advantages and five disadvantages of mixed research **(10 marks)**

b) Discuss four fundamental differences between Quantitative and Qualitative research approaches. Your discussion should strictly on research approaches, theory formulation, epistemological orientation and ontological orientation **(10 marks)**

QUESTION 5 [20 MARKS]

a) Briefly discuss the following terms in the context of SEM
   i) Latent Variable **(2 marks)**
   ii) Exogenous Variable **(2 marks)**
   iii) Endogenous Variables (2 **marks)**

b) Collins and Hussey (2003, pg 51) discuss a continuum of core ontological assumptions with positivism (objectivism) on the left and phenomenology (subjectivism/constructivism) on the right side. Briefly discuss the difference between objectivism and constructivism (10 **marks)**

c) Identify any four differences between positivist and phenomenological paradigms (4 **marks)**