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 6113

COURSE TITLE: EMERGING ISSUES IN CYBERSECURITY

EXAM VENUE: **STREAM: IT SECURITY**

DATE: 12/08/19   **EXAM SESSION: 2.00 – 5.00PM**

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]

Determining emerging research topics in cybersecurity is essential, not only for research agencies but also for individual researchers. Previous studies have created various bibliographic indicators for the identification of emerging research topics. Several authors have used different methodologies for determining emerging research trends. Briefly discuss different methodologies listed below, that may be used to determine research trends. Identify their weaknesses and strengths.

a) Bibliometric analysis **(5 marks)**
b) Co-Word analysis **(5 marks)**
c) Scientometric analysis **(5 marks)**
d) Co-citation analysis **(5 marks)**

QUESTION 2 [20 MARKS]

The *ENISA Threat Landscape Report 2018* "provides the results of the yearly threat assessment for the top 15 cyber threats for the year 2018. Briefly discuss any ten of these threats and identify specific mitigation techniques proposed in the report.

QUESTION 3 [20 MARKS]

A recent report by tech consultancy firm Serianu suggests that Cyber security threats are estimated to have cost Kenya's economy about Sh29.5 billion in 2018. Cyber threats have gone up a great deal, according to the Communications Authority of Kenya data. Some 10.2 million threats were detected in the last three months of 2018, over 2,200 times the 4,589 recorded in the same period the previous year. As a result, the President of Kenya has appointed a task force to study and present a report to his office regarding the cybersecurity trend in the next five to ten years. You have been appointed as the chair of this task force by virtue of your education – PhD in IT Security. Discuss the procedure you would follow to determine security trends. In your discussion, include a framework to guide your study. Nb. You are advised to use the **PESTLE method** developed by Helsinki Institute for Information Technology HIIT and VTT Technical Research Centre of Finland for determining future information security trends.

QUESTION 4 [20 MARKS]

During your analysis of the research trends in Information Technology security you were required to investigate the near-future information security issues. Your analysis revealed some interesting potential researchable idea/problem.

a) Discuss any two research problems you identified **(6 marks)**

b) Formulate two research objective s and two research question for the problem identified above **(4 marks)**

c) Identify the research design you would adopt for this study and provide a justification **(3 marks)**

d) Identify the research philosophy that informed your choice of the research design above and explain the rationale for your choice **(3 marks)**

e) Discuss the data analytical technique you would adopt for the selected research design in (c) above **(4 marks)**

QUESTION 5 [20 MARKS]

Cloud Computing is increasingly becoming popular as many enterprise applications and data are moving into cloud platforms. However, a major barrier for cloud adoption is real and perceived lack of security. Cloud security must grow and evolve to face these threats and provide a bulwark of defense for the consumers that leverage the efficiencies and advantages cloud services provide. No wonder it is becoming common to hear things such as "Cybersecurity is in the cloud". Discuss the cybersecurity issues in the cloud that businesses have to deal with today and in the future