JARAMOGI OGINGA ODINGA UNIVERSITY OF SCIENCE AND TECHNOLOGY

SCHOOL OF INFORMATICS AND INNOVATIVE SYSTEMS

UNIVERSITY EXAMINATION FOR THE DEGREE OF BACHELOR SCIENCE IN INFORMATION COMMUNICATION TECHNOLOGY

1st YEAR 2nd SEMESTER 2019/20 ACADEMIC YEAR

MAIN CAMPUS

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COURSE CODE: ICT 3124

COURSE TITLE: Systems Theory

EXAM VENUE: **STREAM: BSc ICT**

DATE: Dec 03 2020   **EXAM SESSION:**

TIME: 2.00 HOURS

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INSTRUCTIONS:

1. **Answer Question 1 (Compulsory) and ANY other two questions**
2. **Candidates are advised not to write on the question paper**
3. **Candidates must hand in their answer booklets to the invigilator while in the examination room**

Question 1

a) A system consists of a set of elements that function _____ with each other
(1 mark)

b) _____ are all the factors that are brought into the system from the outside

 (**1 mark**)

c) Everything outside a system which affects a system is referred to a system's _____

(**1 mark**)

d) Open-closed refers to the amount of interaction a system has with its _____

(**1 mark**)

e) When elements of a system mutually influence each other they are said to be_____

 (**1 mark**)

f) The part of a system's output which is recycled as input to help the system to stay on track is called _____(**1 mark**)

g) Define the term synergy   (**2 marks**)

h)Define the following terms using relevant examples:

i)system boundary   (**2 marks**)

ii)system interface   (**2 marks**)

iii) decoupling   (**2 marks**)

iv)system environment   (**2 marks**)

i) Use 3 examples to explain how various elements of a system are interdependent (**6 marks**)

j) What are the 5 components that make up an information system   (**5 marks**)

k) An organization can be viewed as a system.Explain   (**3 marks**)

Question 2

a) Highlight 2 advantages and 2 disadvantages of systems theory   (**4 marks**)

b) Identify 4 tenets of systems thinking   (**4 marks**)

c) Clearly explain how systems theory is applied in software development   (**8 marks**)

d) Differentiate between hard and soft systems **(2 marks)**

Question 3

a) What is the feedback of a system **(2 marks)**

b) Give 4 examples of feedbacks that an appointment system might receive **(4 marks)**

c)Briefly explain what a system consists of **(8 marks)**

e) Identify 3 stages of systems approach **(6 marks)**

Question 4

a) Define a subsystem (**2 marks**)

b) Discuss 4 kinds of subsystems that exist in JOOUST (**8 marks**)

c) Show diagrammatically SDLC and explain each step/stage **(6 marks)**

d)Why are boundary and environment important for understanding a system **(4 marks)**

Question 5

a) Differentiate between an open system and a closed system (**2 marks**)

b) Briefly explain then following system properties:
i)holism **(2 marks)**
ii)adaptability **(2 marks)**
iii)interdependence **(2 marks)**
iv)independence **(2 marks)**

c) Discuss 3 IT management issues related to IT and organisations **(6 marks)**

d)Highlight 4 basic principles of system theory **(4 marks)**