



**JARAMOGI OGINGA ODINGA UNIVERSITY OF SCIENCE AND TECHNOLOGY
SCHOOL OF INFORMATICS AND INNOVATIVE SYSTEMS
UNIVERSITY EXAMINATION FOR THE BACHELOR OF SCIENCE
IN FOOD SECURITY
YEAR TWO SEMESTER ONE
MAIN CAMPUS**

COURSE CODE: SCS 3231

COURSE TITLE: DATA COMMUNICATION PRINCIPLES

EXAM VENUE: STREAM:

DATE: EXAM SESSION:

TIME: 2.00 HOURS

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 ONE – 30 MARKS

1. Write briefly about five components of a data communication system. (5 Marks)
2. Differentiate between broadcast networks and point-to-point networks. (5 Marks)
3. Explain briefly the following transmission modes: (6 Marks)
 - a. Simplex
 - b. Half – duplex
 - c. Full – duplex
4. What are the differences between datagram and virtual circuit approaches in packet switching network? Which one is advantageous and why? (6 Marks)
5. Name two well known data transport protocols provided by the internet transport layer. Provide a brief description of each service and indicate the type of application that might use the service. (8 Marks)

QUESTION TWO 20 MARKS

1. Describe the OSI seven layer reference model. Name each of the layers in the model and draw a diagram showing the ordering of the layers. Write a paragraph describing the areas of function that each layer is responsible for. (14 Marks)
2. Name two well know data transport protocols provided by the internet transport layer. Provide a brief description of each service and indicate what type of application might use the service. (6 Marks)

QUESTION THREE 20 MARKS

1. Differentiate between a protocol and an interface in regard to data communication. (4 marks)
2. Explain the following:-
 - a. Synchronous Transmission. (2 marks)
 - b. Asynchronous Transmission (2 marks)
 - c. Ethernet (2 marks)
3. Discuss any two types of errors that occur during digital transmission. (2 marks)
4. Contrast the OSI model you have just described with the TCP/IP reference model. Using a diagram show the correspondence between relevant protocol layers in the two models. (8 Marks)

QUESTION FOUR 20 MARKS

1. What is the difference between switching and multiplexing? Explain briefly three multiplexing schemes. (12 marks)
2. Discuss the protocols employed in packet switching (08 marks)

QUESTION FIVE 20 MARKS

1. Explain the various Network topologies with aid of neat diagrams in each case. (10 marks)
2. Distinguish between Internet and intranet (04 marks)
3. Discuss all the six basic hardware components used in construction of any network. (06 marks)