



**JARAMOGI OGINGA ODINGA UNIVERSITY OF SCIENCE AND TECHNOLOGY**  
**SCHOOL OF INFORMATICS AND INNOVATIVE SYSTEMS**  
**UNIVERSITY EXAMINATION FOR THE DEGREE OF BACHELOR OF**  
**INFORMATION COMMUNICATION AND TECHNOLOGY**  
**1<sup>st</sup> YEAR 2<sup>nd</sup> SEMESTER 2017/2018 ACADEMIC YEAR**  
**MAIN CAMPUS**

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**COURSE CODE : IIT 3121**

**COURSE TITLE : DATA COMMUNICATION PRINCIPLES**

**EXAM VENUE : STREAM ICT :**

**DATE : April, 2017 EXAM SESSION :**

**TIME: 2.00 HOURS**

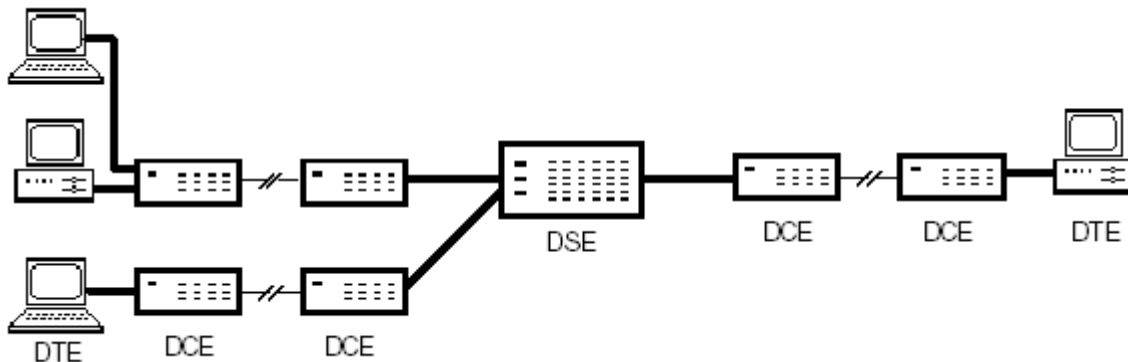
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**INSTRUCTIONS:**

- 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 ONE 30 MARKS**

- a) Describe the following terms as used in Data Communications.
- i) Computer Network **(2 marks)**
  - ii) Internet Service Provider **(2 marks)**
  - iii) Networking Device **(2 marks)**
  - iv) Client **(2 marks)**
  - v) Server **(2 marks)**
- b) With the aid of a diagram, Describe the five basic components of a network  
**(10 marks)**
- c) Differentiate between packet Switching and Network Switching **(4 marks)**
- d) The following diagram shows network equipment types. You are required to explain each network equipment in this diagram. **(6 marks)**



### **QUESTION TWO 20 MARKS**

- a) Give Six advantages of computer networks **(6 marks)**
- b) Give any two functions of networking devices **(4 marks)**
- c) With the aid of diagrams, Describe at least FIVE types of network topology. **(10 marks)**

### **QUESTION THREE 20MARKS.**

- a) Write short notes on the following
- i) Repeater **(2 marks)**
  - ii) Bridges **(2 marks)**
  - iii) Hub **(2 marks)**
  - iv) Switch **(2 marks)**

- v) Router **(2 marks)**
- b) Give five clear differences between connection-oriented and connectionless communication modes. **(5 marks)**
- c) Describe at least three reasons why we need standards in Data Communications **(3 marks)**
- d) Mention at least TWO international organizations that determines the legal standards in Data Communications **(2 marks)**

#### **QUESTION FOUR 20MARKS**

- a) Differentiate between:
  - i) A WAN and a MAN **(2 marks)**
  - ii) A LAN and storage area network **(2 marks)**
  - iii) Intranet virtual Private network and extranet virtual private network **(2 marks)**
  - iv) Bandwidth and throughput **(2 marks)**
  - v) Peer to Peer networks and Mesh topology **(2 marks)**
- b) Give any five factors that affect throughput in a network. **(5 marks)**
- c) Transmission is the act of transporting information from one location to another via a signal. The signal may be analog or digital, and may travel in different media. With the aid of diagrams, describe the two types of signals used in data communication. **(5 marks)**

#### **QUESTION FIVE 20 MARKS**

- a) The TCP/IP model was created by the department of defense (DOD) to enable communications across all networks in the world. Explain the different layers of the TCP/IP model with all the protocols that are in each layer. **(10 marks)**
- b) Explain in details the OSI model layers. **(10 marks)**