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**GARISSA UNIVERSITY**

**UNIVERSITY EXAMINATION 2018/2019 ACADEMIC YEAR TWO**

**SECOND SEMESTER EXAMINATION**

**SCHOOL OF INFORMATION SCIENCE AND TECHNOLOGY**

**FOR THE DEGREE OF BACHELOR OF INFORMATION SCIENCE**

**COURSE CODE: INS 210**

**COURSE TITLE: DATA COMMUNICATION**

**EXAMINATION DURATION: 2 HOURS**

**DATE: 07/02/2020 TIME: 09.00-11.00 AM**

**INSTRUCTION TO CANDIDATES**

* **The examination has FIVE (5) questions**
* **Question ONE (1) is COMPULSORY**
* **Choose any other TWO (2) questions from the remaining FOUR (4) questions**
* **Use sketch diagrams to illustrate your answer whenever necessary**
* **Do not carry mobile phones or any other written materials in examination room**
* **Do not write on this paper**

**This paper consists of TWO (2) printed pages *please turn over***

**QUESTION ONE (COMPULSORY)**

1. Explain with the help of schematic diagram the main elements of digital data communication system. **[6 Marks]**
2. Explain advantages of fiber optic cable **[6 Marks]**
3. Explain the operation of the following network devices **[6 Marks]**
   1. Switch
   2. router
   3. firewall
4. Define network security and explain the objectives of security **[6 Marks]**
5. Explain three types of computer networks. **[6 marks]**

**QUESTION TWO**

1. Define the term multiplexing **[2 marks]**
2. Explain three types of multiplexing techniques **[9 marks]**
3. Jane is a lecturer at Garissa University and she wants to purchase a book from one of the online stores. Explain the logical data communication from the time she requests a book till completion of the process. (assume the internet protocol is TCPIP protocol suite) **[9 Marks]**

**QUESTION THREE**

1. Explain three types of network topologies **[9 Marks]**
2. Communication channels can be classified by the directions in which they allow data to be transmitted. Explain three different communication modes **[6 Marks]**
3. Distinguish between connection oriented and connectionless switching techniques **[6 marks]**

**QUESTION FOUR**

1. Explain Three characteristics of satellite communication channel as a means of data transmission **[6 Marks]**
2. Explain the causes of signal interference in data communication and how you can minimize their effects **[6 Marks]**
3. Cyber-attacks and threats are on the increase. Explain the threats and control measures an organisation should put in place **[8 Marks]**

**QUESTION FIVE**

1. Explain three functions of network layer in OSI model **[6 marks]**
2. Explain the following protocols **[6 marks]**
   1. HTTP
   2. DHCP
   3. SMTP
3. Explain why GAU should adopt the following technologies
   1. Cloud computing **[4 marks]**
   2. Tele conferencing **[4 marks]**