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**GARISSA UNIVERSITY**

**UNIVERSITY EXAMINATION 2020/201 ACADEMIC YEAR ONE**

**SECOND SEMESTER EXAMINATION**

**SCHOOL OF SCHOOL OF PURE AND APPLIED SCIENCES**

**DIPLOMA IN INFORMATION TECHNOLOGY**

**COURSE CODE: DIT 022**

**COURSE TITLE: DATA COMMUNICATION AND NETWORKING II**

**EXAMINATION DURATION: 2 HOURS**

**DATE: 17/08/2021 TIME: 12.00-2.00 PM**

**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. List and describe the basic components of a network with their function? 6 marks
2. Signal modulation is an important element in transmission, explain this fact 6 marks
3. Describe different techniques used to modulate an analog signal into an analog system. 8 marks
4. What are the different modulation techniques used to modulate a digital signal into an analog system? 2 marks
5. Explain the difference between simplex, half-duplex and full duplex transmission. 8 marks

**QUESTION 2**

1. Explain, the major functions in transmission. 4 marks
2. Compare parallel transmission and serial transmission and highlight the why parallel can be chosen over serial? 6 marks
3. What is the difference between baud and bit rate? 2 marks
4. Outline the difference between synchronous and asynchronous transmission. 8 marks

**QUESTION 3**

1. What is the role of modem in data communication? 4 marks
2. What is multiplexing? Describe different types of multiplexing scheme. 6 marks
3. When would you use Statmux in place of synchronous time division multiplexing 4 marks
4. Describe how a communication facility is shared in broadcast type of environment 6 marks

**QUESTION 4**

1. Where would you use terrestrial microwave as a transmission media? 4 marks
2. What is circuit switching? What are the disadvantages of circuit switching? 6 marks
3. Why packet switching is more efficient than message switching? What are the typical applications of message switching? 4 marks
4. Describe in detail, the difference between the datagram and virtual circuit techniques. 6 marks

**QUESTION 5**

* 1. OSI Reference model enables open systems to communicate" explain. 3 marks
  2. What are the functions performed by the presentation layer? 4 marks
  3. Why do we need a layered architecture in a networking environment? 3 marks
  4. Reliability in data transmission is of prime importance. What are the layers that contribute to a reliable data transfer? 4 marks
  5. What is the commonality between OSI model and TCP/IP protocol suite? 6 marks