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**GARISSA UNIVERSITY**

**UNIVERSITY EXAMINATION 2020/2021 ACADEMIC YEAR FOUR**

**SECOND SEMESTER EXAMINATION**

**SCHOOL OF PURE AND APPLIED SCIENCES**

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

**COURSE CODE: INF 460**

**COURSE TITLE: NETWORK ORGANIZATION AND ADMINISTRATION**

**EXAMINATION DURATION: 2 HOURS**

**DATE: 18/08/2021 TIME: 3.00-5.00 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. State any FOUR (4) functions of a Network administrator. (4 Marks)
2. Describe any three types of network topologies. **(6 Marks)**
3. State the top-most principles that guide network and system administrators **(5 Marks)**
4. Describe the various classes of networks, specifying the network and host configurations **(8 Marks)**
5. Discuss the scope of security in a network (8 Marks)

**QUESTION TWO**

1. Name and describe the layers of the OSI model (14 marks)
2. Describe the purpose of a subnet and its netmask. (4 marks)
3. Explain what the ping program does. (2 marks)

**QUESTION THREE**

1. Draw a diagram showing the structure of the IP Datagram Header, include field sizes in bits and label the diagram with the field names. (10 marks)
2. Discuss in detail the purpose of the following IP Header fields:
   1. Identification
   2. Fragment offset
   3. Header Checksum? (6 Marks)
3. List out FOUR layers of a TCP/IP protocol suite. (4 Marks)

**QUESTION FOUR**

1. Discuss in detail, using clearly labelled diagrams for illustration, the operation of

CSMA/CD, the media access control technique used in Ethernet. (10 Marks)

1. In the context of the Physical Layer, define the following types of serial communications:
   1. Synchronous transmission
   2. Asynchronous transmission (4 marks)
2. Describe the main hardware components in a human–computer system. (6 Marks)

**QUESTION FIVE**

1. You have recently been employed as a network administrator at Mazuri technologies and one of your responsibilities is to setup a network. Advice the management on any FOUR network devices that need to be bought to successfully set up the Local Area Network (4 Marks)
2. What does ISO/OSI reference model stand for and what is its significance in computer networks? (3 Marks)
3. Differentiate between 10Base2 and 10Base5. (2 Marks)
4. Name five components of systems policy (5 Marks)
5. Discuss the options for allocating an IP address to a computer. (6 Marks)