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**GARISSA UNIVERSITY**

**UNIVERSITY EXAMINATION 2019/2020 ACADEMIC YEAR FOUR**

**SECOND SEMESTER EXAMINATION**

**SCHOOL OF INFORMATION SCIENCE AND TECHNOLOGY**

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

**COURSE CODE: INF 460**

**COURSE TITLE: NETWORK ORGANIZATION AND ADMINISTRATION**

**EXAMINATION DURATION: 2 HOURS**

**DATE: 14/02/2020 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. State any FOUR (4) management areas of networks. **(4 Marks)**
2. Describe areas of Security Management. **(5 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. 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 THREE**

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 FOUR**

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 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 **(4Marks)**
2. What does ISO/OSI reference model stand for and what is its significance in computer networks? **(3Marks)**
3. Differentiate between 10Base2 and 10Base5. **(2 Marks)**
4. You are the network administrator for XY Systems Ltd. You have been tasked with creating 6 subnets. Using the following source IP 131.107.4.10, calculate the following:
	1. The network class of the Source IP **(1 Mark)**
	2. Number of bits you need to borrow to form the new networks **(2 Marks)**
	3. The new subnet mask of the 6 networks **(2 Marks)**
5. Discuss the options for allocating an IP address to a computer. **(6 Marks)**