



**MASENO UNIVERSITY**  
**UNIVERSITY EXAMINATIONS 2017/2018**

**SECOND YEAR FIRST SEMESTER EXAMINATIONS FOR THE  
DEGREE OF BACHELOR OF SCIENCE IN INFORMATION  
TECHNOLOGY**

**MAIN CAMPUS**

**CIT 213: COMPUTER NETWORKS LAB I**

Date: 15<sup>th</sup> February, 2018

Time: 12.00 - 3.00 pm

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**INSTRUCTIONS:**

- Answer ALL questions in SECTION A and any other TWO from SECTION B
- Write your registration number on all sheets of the answer book used.
- Use a NEW PAGE FOR EVERY QUESTION attempted, and indicate number on the space provided on the page of the answer sheet.
- Fasten together all loose answer sheets used.
- Mobile phones and PDAs are NOT allowed in the examination room.



**SECTION A****COMPULSARY QUESTION****(30 MARKS)**

- a) Discuss the difference between the Transmission Control Protocol (TCP) and User Datagram Protocol (UDP) and how the computer determines when to use each. **(6 Marks)**
- b) Differentiate between the following
- i. Frame and Packet **(2 Marks)**
  - ii. Simplex and half-duplex **(2 Marks)**
  - iii. Port and Connector **(2 Marks)**
  - iv. MAC –Address and IP Address **(2 Marks)**
  - v. Encoding and Encapsulation **(2 Marks)**
  - vi. Bandwidth and through put **(2 Marks)**
- c) Identify any **FIVE** organizations that define and enforce the network layer standard. **(4 Marks)**
- d) Explain how computer networks have impacted global communication. **(8 Marks)**

**SECTION B**

**ATTEMPT ANY TWO QUESTIONS**

**QUESTION 2**

- a) Explain the structure of a crossover cable with the aid of a suitable diagram and identify any **FOUR** network connection scenarios where the cable can be use. (8 marks)
- b) Explain the attributes of each of the following network devices and factors that would be considered before purchasing each.
- i. Router (4 Marks)
  - ii. Switch (4 Marks)
  - iii. Wireless Access point (4 Marks)

**QUESTION 3**

- a) Discuss ways in which fault tolerance can be realized in an enterprise network. (8 Marks)
- b) Explain with the structure of an optical fiber cable with the aid of a suitable diagram and explain the function of each component. (6 Marks)
- c) Compare the structures of an **IPv4 address** and a **MAC address**, explain where each is used in the process of communication and point out how a network device can use one to establish the other. (6 Marks)

**QUESTION 4**

- a) Describe the concepts of modes in cisco devices and explain the process of navigating through the various modes, highlighting the commands used to move between modes. (10 Marks)
- b) Describe the structure of IPv6 Addresses and state any **FOUR** types and scenarios where they can be used. (10 Marks)

**QUESTION 5**

- a) Describe the boot process of a layer 3 device. **(8 Marks)**
- b) Explain functions of the following layers of the OSI model and highlight the changes that occur on the Protocol Data Unit, each of these layers, on a computer that intends to send data.
- i. Transport Layers **(2 Marks)**
  - ii. Presentation Layer **(2 Marks)**
  - iii. Physical Layer **(2 Marks)**
- c) Discuss the differences between *Unicast Communication*, *Multicast Communication* and *Broadcast Communication* and for each, give an example of when it is utilized in network communication. **(6 Marks)**