



MASENO UNIVERSITY
UNIVERSITY EXAMINATIONS 2017/2018

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

MAIN CAMPUS

CIT 205: COMPUTER NETWORKS

Date: 15th February, 2018

Time: 8.30 - 11.30 am

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.



SECTION A COMPULSARY QUESTION (30 MARKS)

QUESTION 1

- a) Given the address space **172.67.0.0/20**, subnet the address space and distribute it across the following departments (IP address requirements are shown in brackets): Administration (220), Marketing (1012 users), Sales (760 users), Production (499 users) and Customer Service (66 users). For each subnet, shown;
- i. Subnet ID. (2.5 Marks)
 - ii. Custom subnet mask in both prefix notation and decimal notation. (2.5 Marks)
 - iii. Number of unused IP addresses. (2.5 Marks)
 - iv. Broadcast IP Address. (2.5 Marks)
- b) Defend the need for computer networks in modern business enterprises. (4 Marks)
- c) Explain how the **OSI Reference model** can be used as a troubleshooting tool. (4 Marks)
- d) Explain the **FOUR** key differences between IPv4 and IPv6 addressing schemes. (4 Marks)
- e) Outline key reasons why the **Client-Server** computer network model is adopted for the internet architecture. (4 Marks)
- f) Explain any **FOUR** factors that a networks engineer should be considered when selecting a network media for use in a network. (4 Marks)