



MASINDE MULIRO UNIVERSITY OF

SCIENCE AND TECHNOLOGY
(MMUST)

MAIN CAMPUS

UNIVERSITY EXAMINATIONS

2021/2022 ACADEMIC YEAR

FOURTH YEAR SECOND SEMESTER EXAMINATION

FOR THE DEGREE

OF

BSC INFORMATION TECHNOLOGY

COURSE CODE: BIT 421E

COURSE TITLE: NETWORK PERFORMANCE AND OPTIMIZATION

DATE: Monday 25/04/2022 TIME: 8:00a.m-10:00a.m

INSTRUCTIONS TO CANDIDATES

Question ONE is compulsory
Answer THREE (3) questions
TIME: 2 Hours

MMUST observes ZERO tolerance to examination cheating
This Paper Consists of 2 Printed Pages. Please Turn Over.



QUESTION ONE [30 MARKS]

- (a) Explain the difference between TCP/IP and OSI-7 Layer Model [6 marks]
- (b) Briefly explain the benefits of Network Documentation [4 marks]
- (c) Network monitoring tools are available for each of the following categories. Give two examples for each listed category.
 - (i) Active Tools [2 marks]
 - (ii) Passive Tools [2 marks]
 - (iii) Automated Tools [2 marks]
 - (iv) Critical Network Service Monitoring [2 marks]
- (d) Differentiate between the following terminologies of network performance
 - (i) Jitters and Latency [6 marks]
 - (ii) Explain the importance of Jitters and Latency in a network performance [6 marks]

QUESTION TWO [20 MARKS]

- (a) It is prudent for a Network administrator to keep track of every configuration essential to a network. Suggest three key features, you will look for in a tool needed for network Configuration Management [6 marks]
- (b) Vulnerability is a characteristic of a computer or a network system which poses weakness to the overall security of a computer or a network that can be exploited by a threat. Explain four sources of vulnerability in a network. 8 marks
- (c) Give the difference between a MAC address and IP address [4 marks]
- (d) Name two reasons for measuring the performance of a network [2 marks]

QUESTION THREE [20 MARKS]

- (a) Differentiate between the following:
 - (i) Network availability and network reliability [4 marks]
 - (ii) Throughput and response time [4 marks]
 - (iii) Ping and Traceroute commands [4 marks]
- (b) Describe four of the operational functions of the SNMP Protocol data unit type [8 marks]

QUESTION FOUR [20 MARKS]

- (a) Among the service offered by the Network Management System is measuring the Network Quality of Service (QoS). As a Network Manager, describe five parameters to consider when determining Network quality of service [10 marks]
- (b) State seven reasons of monitoring Network performance [7 marks]
- (c) In which situation would UDP be preferred over TCP? [3 marks]

QUESTION FIVE [20 MARKS]

- (a) Briefly explain how the following factors would affect Network performance.
 - (i) Infrastructure [2 marks]
 - (ii) Applications [2 marks]
 - (iii) Security [2 marks]
 - (iv) Network issue [2 marks]
- (b) Fibre optic have become common in implementation of computer networks. Discuss four advantages associated with this media [4 marks]
- (c) Signals travel through transmission media, which are not perfect. This imperfection causes signals impairment. Name and briefly explain three factors causing transmission impairment in a network [6 marks]
- (d) Differentiate between IPv4 and IPv6 addressing systems [2 marks]