



**MASINDE MULIRO UNIVERSITY OF SCIENCE AND
TECHNOLOGY
(MMUST)**

**UNIVERSITY SPECIAL/SUPPLEMENTARY
EXAMINATIONS
2021/2022 ACADEMIC YEAR**

**END OF SEMESTER EXAMINATIONS
YEAR FOUR SEMESTER TWO EXAMINATIONS**

**FOR THE DEGREE OF
BACHELOR OF SCIENCE
(INFORMATION TECHNOLOGY)**

COURSE CODE : BIT 421E

**COURSE TITLE : NETWORK PERFORMANCE AND
OPTIMIZATION**

SUPPLEMENTARY / SPECIAL EXAMINATION

DATE: 2/08/2022

TIME: 11:00A.M-1:00P.M

INSTRUCTIONS TO CANDIDATES

ANSWER QUESTION ONE AND ANY OTHER TWO.

QUESTION ONE [30 MARKS]

- (a) Define the following network troubleshooting tools (6 marks)
- (i) Ping
 - (ii) Tracert
- (b) Explain the following four network characteristics that constitute the basic paradigms of Network Measurement.
- (i) Latency (3 marks)
 - (ii) Packet Loss (3 marks)
 - (iii) Path Detection (3 marks)
 - (iv) Bandwidth (3 marks)
- (c) Briefly describe to distinguish between the following two basic approaches of network monitoring.
- (i) Active Monitoring (4 marks)
 - (ii) Passive Monitoring (4 marks)
- (d) Name and briefly describe any two factors that may affect the performance of a network. (4 marks)

QUESTION TWO [20 MARKS]

- (a) Briefly discuss three advantages associated with *Fibre optic* that encourage preference over other networking cables in the implementation of computer networks. (6 marks)
- (b) How would the following factors affect a network performance?
- (i) Applications (3 marks)
 - (ii) Infrastructure (3 marks)
 - (iii) Security (3 marks)
- (c) Name any five factors differentiating *IPv4* from *IPv6* addressing modes (5 marks)

QUESTION THREE [20 MARKS]

- (a) Explain four reasons for monitoring network performance (8 marks)
- (b) As a Network Manager, describe four parameters to consider when determining Network quality of service (8 marks)
- (c) Under what circumstances would a Network Manager prefer UDP over TCP?(4 marks)

QUESTION FOUR [20 MARKS]

- (a) Explain each of the following network infrastructure devices: (8 marks)
- (i) Switch
 - (ii) Routers
 - (iii) Bridges
 - (iv) Repeaters
- (b) Name three reasons for measuring network performance in an organization. (6 marks)
- (c) 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 three sources of vulnerability in a network. (6 marks)

QUESTION FIVE [20 MARKS]

- (a) Discuss the following terms as applied in network performance and optimization:
- (i) Network throughput (3 marks)
 - (ii) Network availability (3 marks)
 - (iii) Traceroute command (3 marks)
- (b) Briefly describe the main functions of SNMP on network management (4 marks)
- (c) Outline four factors that may cause interference to a LAN (4 marks)
- (d) Define the term VoIP (3 marks)