



“Investing in Africa’s future”

COLLEGE OF ENGINEERING AND APPLIED SCIENCES
NCSC302: ADVANCED NETWORKS AND COMMUNICATIONS

NOVEMBER 2023

LECTURER: MR. L. DHLAKAMA

TIME: 3 HOURS

INSTRUCTIONS

1. Write your Student number at the top of answer booklet provided.
 2. Answer ALL Questions from Section A.
 3. Choose any **Two** (2) Questions from Section B
 4. The marks given in brackets at the end of each question are indicative of the weight given to each part of the question.
 5. This question paper consists of 3 printed pages
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SECTION A (40 MARKS)

Answer All questions from Section A

Question 1

- (a) Outline the benefits of computer networking in an organization. (10 marks)
- (b) Differentiate between TCP/IP reference model and ISO reference model (10 marks)

Question 2

- (c) Define computer security in computer networking. (2 marks)
- (d) Differentiate between and offensive security method in computer networking. (10 marks)
- (e) List 2 examples of examples offensive and defensive security measures in computer networking (8 marks)

SECTION B (60 MARKS)

Answer any 2 questions from Section B

Question 3

- (a) Explain the following infrastructure, components and cabling as used computer networking. (20 marks)
 - (i) Routers.
 - (ii) Switch
 - (iii) Hub
 - (iv) Server
 - (v) Network adapters
 - (vi) Firewalls
 - (vii) Intrusion detection systems (IDS)
 - (viii) Access points
 - (ix) Patch panels.
 - (x) Cable testers.
- (b) Discuss the concept of a subnet and its purpose in IP networking. (10 marks)

Question 4

- (a) Explain the concept of Quality of Service (QoS) in networking and communication.
- (b) Discuss the key components and techniques used to achieve QoS. (10 marks)
- (c) Briefly explain four IP addressing and types. (10 marks)

Question 5

- (a) Discuss the concept of network security and the different layers of defense that can be implemented to protect networks. (20 marks).
- (b) Explain the concept of cloud computing and its impact on network architecture and services. (10 marks)

Question 6

- (a) What is the role of Data Centre and Automation Controller (DCAC) in advanced data communication and networks? (10 marks)
- (b) What are some network automation tools used for managing and configuring network devices? (10 marks)
- (c) How can Python scripting be used for network automation? (10 marks)

End of Examination