



MACHAKOS UNIVERSITY

University Examinations for 2020/2021 Academic Year

SCHOOL OF ENGINEERING AND TECHNOLOGY

DEPARTMENT OF COMPUTING AND INFORMATION TECHNOLOGY

THIRD YEAR SECOND TERM EXAMINATION FOR

DIPLOMA IN INFORMATION COMMUNICATION TECHNOLOGY

DATA COMMUNICATIONS AND NETWORKING

DATE: 3/6/2021

TIME: 11.30-2.30 PM

INSTRUCTIONS

1. You should have the following for this examination:-
 - Answer booklet
2. Answer five of the six questions in this question paper.
3. All the questions carry twenty marks

Candidates should check the question paper to ensure that all the pages are printed as indicated and that no questions are missing

QUESTION ONE

- a) Explain network congestion as used in computer networks (2 marks)
- b) Discuss four types of WAN protocols as used in computer networks. (8 marks)
- c) Outline two advantages of Network design. (2 marks)
- d) Explain three causes of network failure in any network setup. (6 causes)
- e) Define the term network design. (2 marks)

QUESTION TWO

- a) Outline four causes of network congestion during signal transmission. (4 marks)
- b) Outline the use of each of the following network commands as used in Computer Networks.
 - i. Ping (2 marks)

- ii. Ipconfig (2 marks)
- iii. Traceroute (2 marks)
- c) Define communication software as used in computer networks. (2 marks)
- d) Discuss four methods that can be used as network trouble shooting techniques. (8 marks)

QUESTION THREE

- a) Discuss two effects of network congestion as may be experienced in computer networks. (4 marks)
- b) During an ICT class, Wilson described the term browser. State any four types of browsers that he might have mentioned. (4 marks)
- c) List *four* hardware components/equipment required for setting up Local Area Network (LAN) (4 marks)
- d) Explain the following security techniques as used in network security. (8 marks)
 - i. encryption techniques
 - ii. authentication
 - iii. authorization
 - iv. privileges

QUESTION FOUR

- a) The TCP/IP protocols consist of *five* layers:
 - i. Sketch the arrangement of the layers in their correct order. (5 marks)
 - ii. State the function of each of the layer in (i) above. (5 marks)
- b) Joshua, a network administrator with Mactech Company Ltd would like to implement data security in a network. Explain *three* data security techniques that he could implement. (6 marks)
- c) Define the following terms as used in computing.
 - i. Cloud computing (2 marks)
 - ii. Network security (2 marks)

QUESTION FIVE

- a) Discuss three network vulnerabilities that can be experienced in Network security. (6 marks)
- b) The government of Kenya is on a mission to connect all her government offices via fiber optic cable. Explain three advantages of using the type of cable compared to other types. (6 marks)
- c) Distinguish between Wi-Fi and Bluetooth as used in computer networks. (4 marks)
- d) Differentiate between *Backward Error Correction* and *Forward Error Correction* as used in data communication. (4 marks)

QUESTION SIX

- a) Outline *two* challenges facing network professionals as a result of emerging trends in cyber space. (2 marks)
- b) State four merits of structured cabling. (4 marks)
- c) Malembezi has embarked on a plan to acquire a new network/server operating system for his newly configured network, Discuss *four* factors that he should consider when choosing a the System. (8 marks)
- d) Distinguish between *history* and *bookmark* as used in the internet. (4 marks)
- e) Define the term server as used in computer networks. (2 marks)