



MACHAKOS UNIVERSITY

University Examinations for 2020/2021 Academic Year

SCHOOL OF ENGINEERING AND TECHNOLOGY

DEPARTMENT OF COMPUTING AND INFORMATION TECHNOLOGY

SPECIAL/SUPPLEMENTARY EXAMINATION FOR

DIPLOMA IN INFORMATION AND COMMUNICATION TECHNOLOGY

DATA COMMUNICATION AND NETWORKING

DATE: 25/3/2021

TIME: 8:30 – 10:30 AM

INSTRUCTIONS

Attempt Question one and any other two from Section B

SECTION A

QUESTION ONE

- a) Explain the term Data Communications as used in computer networks (2 marks)
- b) Discuss four advantages of computer networks in the society. (8 marks)
- c) Outline two advantages of Top-down Network design. (2 marks)
- d) Explain three causes of network failure in any network setup. (6 marks)
- e) Define the term network design and planning. (2 marks)
- f) Explain three advantages of using Linux server operating system compared to Windows server operating system. (6 marks)
- g) Outline *four* challenges facing network professionals as a result of emerging trends in cyber space. (4 marks)

SECTION B

QUESTION TWO

- a) Differentiate between a bridge and a router as used in computer networks. (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) Differentiate between Static IP and Dynamic IP addresses as used in computer networks IP addressing. (4 marks)
- d) Discuss three methods that can be used as network trouble shooting techniques. (6 marks)

QUESTION THREE

- a) With the aid of a diagram, describe a WAN as used 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) Explain any two benefits of implementing IPv6 over IPv4 in computer networks today. (4 marks)
- d) Explain four functions of protocol as used in data communications. (8 marks)

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* Network security techniques that he could implement. (6 marks)
- c) Malembezi has embarked on a plan to acquire a new network/server operating system for his newly configured network, Discuss *two* factors that he should consider when choosing a the System. (4 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) Joe Biden has decided to hire an ISP for his new company in Chai Moto town. Outline *four* factors that he should consider when acquiring these services. (4 marks)