



MACHAKOS UNIVERSITY

University Examinations for 2019/2020 Academic Year

SCHOOL OF ENGINEERING AND TECHNOLOGY

DEPARTMENT OF COMPUTING AND INFORMATION TECHNOLOGY

SUPPLEMENTARY EXAMINATION

DATA COMMUNICATION AND NETWORKING

JANUARY 2021

TIME: 2 HOURS

INSTRUCTIONS TO CANDIDATES

Attempt Question One (30 Marks) compulsory and any other two (40 Marks) questions 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 causes)
- 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)**

Ends