



MACHAKOS UNIVERSITY

University Examinations for 2016/2017

SCHOOL OF ENGINEERING AND TECHNOLOGY

DEPARTMENT OF COMPUTING AND INFORMATION TECHNOLOGY

SECOND YEAR FIRST SEMESTER EXAMINATION FOR DIPLOMA IN
INFORMATION COMMUNICATION AND TECHNOLOGY

DATA COMMUNICATION AND NETWORKING

DATE: 2/6/2017

TIME: 8:30 – 10:30 AM

INSTRUCTIONS

Answer Questions ONE and Any Other Two Questions

QUESTION ONE (COMPULSORY) (30 MARKS)

- 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) CIA is a policy mostly applied in Wireless networks security. Explain *three* factors that that are included in this. (6 marks)
- g) Outline *four* challenges facing network professionals as a result of emerging trends in cyber space. (4 marks)

QUESTION TWO (20 MARKS)

- a) Explain two advantages of using Linux server operating system compared to Windows server operating system. (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 IP and MAC 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 (20 MARKS)

- 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 (20 MARKS)

- 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 *two* Network security techniques that he could implement. (4 marks)
- c) Explain the following terms as used in the internet.
- i. Firewall, (2 marks)
 - ii. NAT, (2 marks)
 - iii. Attenuation, (2 marks)

QUESTION FIVE (20 MARKS)

- 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) In a network that contains two servers and thirty workstations, explain the best place to install an Anti-virus program. Support your answer. (4 marks)