



MACHAKOS UNIVERSITY

University Examinations for 2017/2018

SCHOOL OF ENGINEERING AND TECHNOLOGY

DEPARTMENT OF COMPUTING AND INFORMATION TECHNOLOGY

FOURTH YEAR SECOND SEMESTER EXAMINATION FOR

BACHELOR OF SCIENCE (COMPUTER SCIENCE)

SCO 401: NETWORK MANAGEMENT

DATE: 5/12/2017

TIME: 8:30 – 10:30 AM

INSTRUCTIONS

Answer Question ONE and any other TWO Questions

QUESTION ONE (30 MARKS)

- a) Describe the following terms as used in Network Management:-
 - i. An agent;
 - ii. Network Management System;
 - iii. Management Information Base (6 marks)
- b) For each of the following protocol, identify the networking model where it works/used.
 - i. SNMP
 - ii. CMIP (4 marks)
- c) Explain why SNMPv3 was released. (2 marks)
- d) Using Ceasar Cipher algorithm with $k = 4$, write the encrypted plaintext message “DATA COMM”.
- e) Passwords are the most common form of authentication of security. Explain three qualities of a good password. (3 marks)
- f) Ken is a lecturer at BOMA University and due to network unreliability he has decided to use a modem throughout the year.

- i. Compute the reliability of his modem if the Mean Time Between Failures (MTBF) is 6000 hours and a transaction takes 20 minutes, or 1/3 of an hour (0.333 hours). (4 marks)
- ii. If the availability of his modem has a MTBF of 6000 hours and a MTTR of 1 hour. Compute the availability of this modem for an 8-hour period. (3 marks)
- g) Network management is key to any organization if full performance is to be realized. Explain four activities involved in network management. (4 marks)
- h) Explain Service Level Agreements (SLAs) as used in network management. (3 marks)
- i) Explain the significance of the ping command in network monitoring and management. (2 marks)
- j) Explain the use of Comparative RMON2 and RMON3 in terms of performance in network management. (2 marks)

QUESTION TWO (20 MARKS)

- a) Boma University has been recently experiencing a high percentage downtime of internet services. The advice from ISP to Boma is to upgrade their bandwidth and setup proper network management policies within their budget.
 - i. Explain the significance of bandwidth in network performance. (2 marks)
 - ii. Outline three network management policies that Boma can employ to improve their services (3 marks)
 - iii. Describe five network cost management techniques that Boma can use within the University to realize better services within their limited budget. (5 marks)
- b) The OSI network management model categorizes five areas of network management, sometimes referred to as the FCAPS model. Explain them. (10 marks)

QUESTION THREE (20 MARKS)

- a) Grace has just attended a workshop as a network administrator on disaster recovery planning.
 - i. Explain the concept of disaster recovery in relation to business continuity. (2 marks)
 - ii. Explain three disaster events grace covered during the workshop. (6 marks)
 - iii. Outline three data/system recovery techniques towards business continuity. (6 marks)

- b) Explain three driving forces in network management. (6 marks)

QUESTION FOUR (20 MARKS)

- a) Explain three advantages of Web-based network management systems and protocols. (3 marks)
- b) Fred is from training on WLAN security organized for all University network administrators.
- i. Define the term network security. (2 marks)
 - ii. Explain the trend in network security. (3 marks)
 - iii. The popularity of WLANs is undeniable. Explain three main driving forces that play in favor of WLANs. (3 marks)
 - iv. Wireless LANs require the same level of security, dependability, and management that wired Networks do. Explain three Network management tasks related to WLANs. (3 marks)
- c) The following are some of the software used by a network administrator at SEKU in network management. Explain the role played by each of this software. (3 marks)
- i. Point management software;
 - ii. Application management software;
 - iii. Enterprise management software.
- d) Describe the functions of the following network management tools used in NMS.
- i. Management tools
 - ii. Monitoring tools
 - iii. Diagnostic tools. (3 marks)