



# MACHAKOS UNIVERSITY COLLEGE

(A Constituent College of Kenyatta University)  
University Examinations for 2015/2016 Academic Year

## SCHOOL OF ENGINEERING AND TECHNOLOGY

### DEPARTMENT OF COMPUTING AND INFORMATION TECHNOLOGY

#### FIRST SEMESTER EXAMINATION FOR DIPLOMA IN SECRETARIAL STUDIES

#### 2901/304A: INFORMATION AND COMMUNICATION TECHNOLOGY III (THEORY)

Date: 1/8/2016

Time: 8:30 – 10:30 AM

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#### INSTRUCTIONS

Attempt all the five questions

#### QUESTION ONE (20 marks)

- a)
  - (i) State the purpose of the Uniform Resource Locator (URL) in the Internet. (2 marks)
  - (ii) Name the two basic parts of a URL address. (2 marks)
- b) State two factors affecting the speed of the Internet. (2 marks)
- c) Explain three facilities that are needed to connect to the Internet. (6 marks)
- d) Describe the term computer network. (2 marks)
- e) Explain the function(s) of each of the following networking devices. (6 marks)
  - i. Repeater
  - ii. Bridge
  - iii. Router

#### QUESTION TWO (20 marks)

- a) Define the following with respect to digital transmission: (6 marks)
  - (i) Simplex Connection.
  - (ii) Half duplex Connection
  - (iii) Full Duplex Connection
- b) Outline four advantages of fiber optic cable over coaxial cable. (4 marks)
- c) Differentiate a router from a bridge. (2 marks)

- d) Using a well labeled diagram, describe the following media. (8 marks)
- i) UTP cable
  - ii) STP cable
  - iii) Optical fiber cable
  - iv) Coaxial cable

**QUESTION THREE (20 marks)**

- a) Define the term channel as used in computer communications. (2 marks)
- b) Name the OSI model layer at which the following devices operate; (4 marks)  
Router; Switch, NIC, Multiplexer
- c) A key aspect of network management is performance management.
- i) State two factors that should be measured in order to monitor the performance of the network. (2 marks)
  - ii) Outline two actions which can be taken to improve the performance of a LAN. (2 marks)
- d) Describe the following security measures in a network. (10 marks)
- i) Intrusion detection system
  - ii) Firewall

**QUESTION FOUR (20 marks)**

- a) A firewall is a popular security feature in a network. Explain how it provides access control in a network. (4 marks)
- b) Describe the following network devices (6 marks)
- i) Switch
  - ii) Modem
  - iii) Multiplexer
- c) Distinguish between the following pairs of data communication terms. (6 marks)
- i) Serial and parallel transmission
  - ii) Synchronous and asynchronous transmission
  - iii) Half duplex and full duplex transmission
- d) Explain two disadvantages of a mesh topology. (4 marks)

**QUESTION FIVE (20 MARKS)**

- a) Identify two drawbacks that are likely to be experienced by an organization in the computer internetworking process. (2 marks)
- b) Name four examples of servers. (4 marks)
- c) Explain the meaning of the term protocol as used in computer networks. (2 marks)
- d) Explain the benefits of unguided networking. (4 marks)
- e) Describe the conditions under which a server-based network is recommended over a peer-to-peer network. (4 marks)
- f) Discuss the functional differences between a switch and a hub. (4 marks)