



MACHAKOS UNIVERSITY

University Examinations for 2016/2017

SCHOOL OF ENGINEERING AND TECHNOLOGY

DEPARTMENT OF COMPUTING AND INFORMATION TECHNOLOGY

THIRD YEAR FIRST SEMESTER EXAMINATION FOR

BACHELOR OF SCIENCE IN COMPUTER SCIENCE

BACHELOR OF SCIENCE IN MATHEMATICS COMPUTER SCIENCE

SCO 300: COMPUTER NETWORKS

DATE: 24/7/2017

TIME: 8:30 – 10:30 AM

INSTRUCTIONS

Answer Question One and Any Other Two Questions

QUESTION ONE (COMPULSORY) (30 MARKS)

- a) Define the following terms as they relate to networking. (5 marks)
- i Network medium
 - ii Signal bounce
 - iii Attenuation
 - iv Encapsulation
 - v NIC
- b) Draw the OSI model and state (precisely) the role of each layer. (7 marks)
- c) With the aid of a well labelled diagram, explain the difference between an Active Topology and a Passive Topology. (4 marks)
- d) Describe the arrangement of wires on:
- i A straight through cable (4 marks)
 - ii A crossover cable (4 marks)
- e) What devices do each of the above cables in Q1)d) connect. (2 marks)

- f) Briefly describe the following terms and give examples of each. (4 marks)
- i Local Area Network (LAN)
 - ii Wireless Wide Area Network (WWAN)
 - iii Wireless Metropolitan area network (WMAN)
 - iv Storage area network (SAN)

QUESTION TWO (20 MARKS)

- a) With the aid of well labelled diagrams describe
- i Components of a packet structure. (3 marks)
 - ii packet creation process (3 marks)
- b) Explain four threats to the Machakos University network. Explain four counter-measures to the threats. (8 marks)
- c) Describe the working of any three major access methods used in Networking. (6 marks)

QUESTION THREE (20 MARKS)

- a) Describe five services network protocols provide. (5 marks)
- b) Describe the two sections of an ip address. (1 mark)
- c) Describe the three classes of ip addresses. (6 marks)
- d) With the aid of diagrams describe how the following network architectures function.
- i Token Ring (4 marks)
 - ii FDDI (4 marks)

QUESTION FOUR (20 MARKS)

- a) Briefly explain four protocols found at the application layer. (8 marks)
- b) Briefly describe the following network devices and state the OSI layer in which they are found. (8 marks)
- i. Router
 - ii. Switch
 - iii. Hub
 - iv. Bridge
- c) Differentiate between the following (4 marks)
- i. Preemptive multitasking and cooperative multitasking
 - ii. Broadcast packet and multicast packet

QUESTION FIVE (20 MARKS)

- a)
 - i Anita has 11 computers and 1 printer. She wants to start a cyber café that also offers printing services. Advise her by explaining the type of network to implement in the cyber café including its merits and demerits. (4 marks)
 - ii Using a well labelled diagram, design for Anita the Cyber café network layout describing in detail: (6 marks)
 - i) the topology to use and how it works
 - ii) the access method the topology will use
 - iii) one advantage and one disadvantage of the topology
- b) Describe five constituent protocols of the TCP/IP. (5 marks)
- c) Describe five functions of a NOS. (5 marks)