



MACHAKOS UNIVERSITY

University Examinations for 2016/2017

SCHOOL OF ENGINEERING AND TECHNOLOGY

DEPARTMENT OF COMPUTING AND INFORMATION TECHNOLOGY

FIRST YEAR FIRST SEMESTER EXAMINATION FOR BACHELOR OF INFORMATION TECHNOLOGY.

SIT 113: NETWORKING

DATE: 5/6/2017

TIME: 11:00 – 1:00 PM

INSTRUCTIONS

Answer Questions ONE and Any Other Two Questions

QUESTION ONE (CMPULSORY) (30 MARKS)

- a) Define the following terms as used in networking. (4 marks)
- i) Attenuation
 - ii) Port
 - iii) Socket
 - iv) Node
- b) Explain the roles of layer 1 to 4 of the OSI reference model. (8 marks)
- c) Discuss three types of network cabling media. (3 marks)
- d) Describe the link protocols that link layer uses to transfer a datagram. (3 marks)
- e) Describe the three broad classes of the multiple access protocol. (6 marks)
- f) Express the following dotted IP addresses to their binary equivalent. (3 marks)
- i) 120.168.0.248
 - ii) 132.0.32.240
 - iii) 182.16.20.127

- g) Explain giving a reason, to what class the IP addresses in 1)f) belong to. (3 marks)

QUESTION TWO (20 MARKS)

- a) Discuss the following network devices. (10 marks)
- i. Repeaters
 - ii. Hubs
 - iii. Bridges
 - iv. Switches
 - v. Routers
- b) Explain four network security objectives in a network. (4 marks)
- c) Describe two network security protocols in each layer of the following network protocol stack. (6 marks)
- i) Application Layer
 - ii) Transport Layer
 - iii) Network Layer

QUESTION THREE (20 MARKS)

- a) Differentiate between the following
- i) Logical and physical topology (2 marks)
 - ii) Physical bus topology and physical star topology (4 marks)
- b) What are the three factors one would consider in deciding whether to implement a peer-to-peer network or a client server network. (3 marks)
- c) Describe briefly two main classifications of networks. (4 marks)
- d) Subnet the following network address. The network should have 1024 computers per subnet.
192. 168. 0. 0
- i) Come up with the number of subnets (2 marks)
 - ii) Come up with three possible range of addresses (3 marks)
 - iii) Come up with the subnet mask. (2 marks)

QUESTION FOUR (20 MARKS)

- a)
 - i) Explain the roles of the layers of the TCP/IP reference model (8 marks)
 - ii) At each of the layers describe two protocols each of the TCP/IP layers. (8 marks)
- b) With the aid of diagrams describe the Data Encapsulation and Data Decapsulation processes. (4 marks)

QUESTION FIVE (20 MARKS)

- a) With the aid of a diagram briefly explain the contents of an Ethernet frame. (5 marks)
- b) Describe the Ethernet CSMA/CD algorithm. (5 marks)
- c) Differentiate between the following (6 marks)
 - i) Circuit switching vs Packet switching
 - ii) Virtual Circuits vs datagrams
 - iv) TDMA vs FDMA
- d) Describe two key fields of an IP address and what each field represents. (4 marks)