Machakos University

University Examinations for 2017/2018 Academic Year

SUPPLEMENTARY

SCHOOL OF ENGINEERING AND TECHNOLOGY

DEPARTMENT OF COMPUTING AND INFORMATION TECHNOLOGY

First Year Second Semester Examination for Bachelor of Information Technology.

SIT 113: NETWORKING

Date: AUGUST 2018 **Time:**

Instructions

This paper consists of FIVE questions.

Answer **question ONE and any other TWO questions** in this paper.

Question One (30 Marks)

a) Define the following terms as used in networking. (4 marks)
   i) Attenuation
   ii) Port
   iii) Socket
   iv) Node

b) Draw the OSI model and state precisely the role of each layer (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) Briefly describe the following items and give examples of each. (6 marks)

(i) Local Area Network(LAN)

(ii) Wide Area Network(WAN)

(iii) Metropolitan Area Network(MAN)

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) Explain any two types of collision Domains in Ethernets (6marks)

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
   iii)TDMA vs FDMA
d) Explain how virtual circuit switched communications works. (4 marks)