MACHAKOS UNIVERSITY

University Examinations for 2018/2019

SCHOOL OF ENGINEERING AND TECHNOLOGY

DEPARTMENT OF COMPUTING AND INFORMATION TECHNOLOGY

THIRD YEAR SPECIAL/SUPPLEMENTARY EXAMINATION FOR

BACHELOR OF SCIENCE (COMPUTER SCIENCE)

SCO 300: COMPUTER NETWORKS

DATE: 24/7/2019 **TIME: 11.00-1.00 PM**

INSTRUCTIONS

ANSWER QUESTION ONE AND ANY OTHER TWO QUESTIONS

QUESTION ONE (30 MARKS)

a) Explain the following terms: (6 marks)

i. Baseband signal

ii. Broadband signal

iii. Bandwidth

iv. Bottleneck

v. Extranet

vi. OSI

b) State three factors to put into consideration in selecting Cable type to be used in implementing a network. (3 marks)

c) Outline five functions of network operating system. (5 marks)

d) Show diagrammatically and explain the layers that specify IEEE 802 standards. (4 marks)

e) Explain the factors that influence the choice of a network topology (5 marks)

f) With the aid of well labeled diagrams describe the encapsulation and decapsulation process in network transmissions (7 marks)

QUESTION TWO (20 MARKS)

a) What are two main classifications of networks. (4 marks)

b) List six services that networks provide. (6 marks)

c) Explain the difference between a router, repeater and bridge (3 marks)

d) Describe briefly the seven layers of the OSI model. (7 marks)

QUESTION THREE (20 MARKS)

a) Describe briefly the two types of twisted pair media. (4 marks)

b) Explain four reasons a wireless media would be chosen over a bound media? (4 marks)

c) What is a major benefit and a major drawback of fiber-optic cable? (2 marks)

d) With the aid of diagrams, explain the difference between a logical and a physical topology. (4 marks)

e) With the aid of diagrams, explain the difference between contention-based and token-passing access methods. (6 marks)

QUESTION FOUR (20 MARKS)

a) When discussing Repeaters, Bridges, and Routers, which devise relies on logical network addresses, physical hardware addresses, or does not use addresses at all? (4 marks)

b) With the aid of diagrams, describe the difference between synchronous and asynchronous transmissions. (4 marks)

c) Describe three protocols that are used in the TCP/IP Protocol suite. (6 marks)

d) Describe three IP classes and their address ranges. (6 marks)

QUESTION FIVE (20 MARKS)

a) Explain five function of a NIC in networking (5 marks)

b) Describe any three types of physical network topologies used in LAN. (6 marks)

c) Distinguish between the following:

i. Radio and microwave transmission. (2 marks)

ii. Half duplex and full duplex transmissions. (2 marks)

d) Explain five ways that a network administrator can enforce security in a network. (5 marks)