

**W1-2-60-1-6**

## JOMO KENYATTA UNIVERSITY

**OF AGRICULTURE AND TECHNOLOGY**

# University Examinations 2016/2017

**YEAR ONE SEMESTER TWO EXAMINATIONS FOR DIPLOMA IN INFORMATION TECHNOLOGY**

**DIT 0204: NETWORK ESSENTIALS**

**DATE: APRIL 2017 TIME: 1½ HOURS**

**SECTION A: ANSWER ALL QUESTIONS**

**QUESTION 1**

a) Explain the following terms (4 marks)

i) Proxy server

ii) Gateway

iii) Client/server network

iv) MAC address

b) Distinguish between Domain and workgroup (4 marks)

c) Explain the two methods available for allocating IP addresses to network devices (4 marks)

d) Compare and contrast cross-over and straight-through cables (4 marks)

e) Given the IP address 20.0.0.15/8. What is the appropriate subnet mask (1 mark)

f) Outline any THREE circumstances in which wireless communication might be considered a better option than using cables (3 marks)

**SECTION B: ANSWER ANY TWO QUESTIONS (20 MARKS EACH)**

**QUESTION 2**

a) Explain the following LAN technologies (4 marks)

i) Ethernet

ii) Fast Ethernet

b) Distinguish between circuit switching and packet switching (4 marks)

c) Using well labled diagrams, describe the following (12 marks)

i) Bus topology

ii) Tree (star-bus)

iii) Star

**QUESTION 3**

a) Compare and contrast the following network architectures

i) Client/server and peer-to-peer (4 marks)

ii) Intranets and extranets (4 marks)

b) Describe the following types of computer network (6 marks)

i) CAN

ii) LAN

iii) WAN

c) Explain any THREE factors that determine data transmission capabilities of a transmission media (6 marks)

**QUESTION 4**

a) Your network has been having security issues lately. Discuss any four security threats that you are likely to be looking to solve (8 marks)

b) Describe the CSMA/CD type of contention protocol (5 marks)

c) As a network administrator, you are tasked with creating five subnets to accommodate the current growth and restructuring taking place in your organization. Using the IP address space 132.100.0.0/16 calculate the following;

i) Identify the IPU4 class that the address belongs to (1 mark)

ii) The number of bits you need to borrow to create the subnets

(2 marks)

iii) The new subnet mask to be used by the subnets (2 marks)

iv) The block size to be used to generate the subnets (2 marks)