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

##  JOMO KENYATTA UNIVERSITY

 **OF**

 **AGRICULTURE AND TECHNOLOGY**

# University Examinations 2015/2016

**YEAR FOUR SEMESTER ONE EXAMINATIONS FOR THE DEGREE OF BACHELOR OF SCIENCE IN INFORMATION TECHNOLOGY**

**BIT 2116: NETWORK SYSTEM DESIGN AND IMPLEMENTATION**

**DATE: AUGUST 2016 TIME: 2 HOURS**

**INSTRUCTIONS: ANSWER QUESTION ONE (COMPULSORY) AND ANY OTHER TWO QUESTIONS**

**QUESTION ONE (30 MARKS)**

a) Explain the following terms; (10 marks)

 i) Protocol

 ii) Computer network

 iii) Trace route

 iv) DNS

 v) Authentication

b) Outline any two impairments of communication channel and explain how they are resolved. (6 marks)

c) Differentiate between wireless network and wired network (6 marks)

d) Describe the functions of the following computer network components;

 i) Gateway (2 marks)

 ii) Bridge (2 marks)

e) Describe the following networking concepts and state their significance;

 i) CIDR (2 marks)

 ii) DHCP (2 marks)

**QUESTION TWO (20 MARKS)**

a) Using a suitable diagram, distinguish between cross –over cable and straight-through cable (4 marks)

b) Explain how the following communication parts of a computer are used:

 i) WAN port (2 marks)

 ii) LAN port (2 marks)

c) A small organization intends to implement a LAN in its office with 15 users in the departments. The organization contemplates to allow its network users to access internet and communication via email.

 i) State any three computers application that may be necessary to install in this network. Justify (3 marks)

 ii) State the functions of the applications you have listed in question 2c(i) above. (3 marks)

 iii) State any four types of devices that may be used in this network. Justify (4 marks)

 iv) Draw a suitable network topology for this LAN. Justify (2 marks)

**QUESTION THREE (20 MARKS)**

a) Explain the following terms;

 i) Class of service (2 marks)

 ii) Quality of service (2 marks)

 iii) Service level agreement (2 marks)

b) Describe the stages used during computer system development (6 marks)

c) State any four services that are provided by computers networks to users (4 marks)

d) State any four services that are provided by computer networks to support user services (4 marks)

**QUESTION FOUR (20 MARKS)**

a) Distinguish between the following:

 i) Encapsulation and decapsulation (2 marks)

 ii) Frame and packet (2 marks)

b) Describe any two types of addresses used in computer networks

 (6 marks)

c) Outline the differences between the TCP/IP and OSI/ISO computer networking models (6 marks)

d) Explain the differences between RJ4S and RJ11 connectors (4 marks)

**QUESTION FIVE (20 MARKS)**

a) Outline any four computer network design constraints (4 marks)

b) State any four criteria used during selection of good computer system software (4 marks)

c) What is system conversion? (2 marks)

d) Describe any four tools used during implementation of a computer network (8 marks)

e) List any four types of computer network users in an organization

 (2 marks)