



THE CO-OPERATIVE UNIVERSITY OF KENYA

END OF SEMESTER EXAMINATION DECEMBER -2023

**EXAMINATION FOR THE DEGREE OF BACHELOR OF SCIENCE IN INFORMATION
TECHNOLOGY
(YEAR II SEM II)**

UNIT CODE: BCIT 2213

UNIT TITLE: NETWORK AND SYSTEMS ADMINISTRATION

DATE: TUESDAY, 19TH DECEMBER, 2023

TIME: 2:30 PM – 4:30 PM

INSTRUCTIONS:

- **Answer question ONE (compulsory) and any other TWO questions**

QUESTION ONE

(a) Define the following terms:

- i. Latency **(2 Marks)**
- ii. Throughput **(2 Marks)**
- iii. Goodput **(2 Marks)**
- iv. Electromagnetic interference (EMI) or radio frequency interference (RFI) **(2 Marks)**
- v. Crosstalk **(2 Marks)**

(b) Explain The **THREE** functions of the **Physical** layer of the OSI model **(6 Marks)**

(c) Showing your working, compute the Binary Equivalent of the following IPv4 Addresses **(4 Marks)**

- i. 192.168.11.10
- ii. 172.16.31.30

(d) Briefly describe the following network security threats:

- i. Identity theft **(1 Mark)**
- ii. Information theft **(1 Mark)**
- iii. Data Loss **(1 Mark)**
- iv. Disruption/ Denial of Service **(1 Mark)**
- v. Virus **(1 Mark)**

(e) Briefly explain the use of the following commands

- i. ping **(1 Mark)**
- ii. tracert **(1 Mark)**
- iii. ipconfig **(1 Mark)**
- iv. ipconfig /all **(1 Mark)**
- v. arp -a **(1 Mark)**

QUESTION TWO

(a) In data Networks, duplex refers to the direction of data transmission between two devices. Explain the following duplex modes

- i. Half Duplex **(2 Marks)**
- ii. Full Duplex **(2 Marks)**

- (b) You and your friend wish to transfer huge files between your two laptops. It would take a lot of time to accomplish this task if you decided to use a memory stick. Your friend asks you to set a simple peer-to-peer network to achieve the objective.
- i. Describe the equipment you require to accomplish this task **(4 Marks)**
 - ii. In order to confirm that there is communication between the two computers, explain the network troubleshooting commands you are likely to use in this task **(2 Marks)**
 - iii. Describe How you will set up the simple peer-to-peer network of the two laptops **(2 Marks)**
 - iv. Explain **FOUR** configurations that are necessary for this task to be accomplishment **(4 Marks)**
- (c) Differentiate between CSMA/CD and CSMA/CA Protocol as used in Ethernet **(4 Marks)**

QUESTION THREE

- (a) Explain **FOUR** achievements of structured cabling in computing **(8 Marks)**
- (b) Describe **THREE** Structural differences between CAT 5e and Coaxial cables **(6 Marks)**
- (c) Differentiate between signal attenuation and crosstalk **(4 Marks)**
- (d) State **TWO** uses for a “straight-through” cable. **(2 Marks)**

QUESTION FOUR

- (a) Distinguish between THROUGHPUT & BANDWIDTH **(4 Marks)**
- (b) Discuss **THREE** main advantages why Fiber Cable is preferred in structured cabling **(6 Marks)**
- (c) With the aid of a diagram differentiate between Step – index multimode fiber and graded – index multimode fiber **(4 Marks)**
- (d) Clearly illustrate the color code arrangements for both ends 568A & 568B in CROSSOVER and STRAIGHT THROUGH cable termination **(6 Marks)**

QUESTION FIVE

- (a) Structured cabling operates under standards and rules that ensures compliance and security in data, video and voice transmission. Discuss any of the **THREE** important rules observed and significance of each **(6 Marks)**
- (b) You have been tasked with the responsibility to build a network of 18 computers and one network printer;
 - i. Discuss FIVE structured cabling tools you would use to come up with the network **(10 Marks)**
- (c) Give two types of network media of your choice that you would use to suit your work in (i) above **(4 Marks)**