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*(Knowledge for Development)*

KIBABII UNIVERSITY

**UNIVERSITY EXAMINATIONS  
2021/2022 ACADEMIC YEAR**

**END OF SEMESTER EXAMINATIONS  
YEAR THREE SEMESTER TWO EXAMINATIONS**

**FOR THE DEGREE OF  
(COMPUTER SCIENCE)**

**COURSE CODE : CSC 313.**  
**COURSE TITLE : COMPUTER NETWORKS**

**DATE: 20/05/2022 TIME: 02.00 P.M. – 04.00 P.M.**

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**INSTRUCTIONS TO CANDIDATES**

**ANSWER QUESTIONS ONE AND ANY OTHER TWO.**

### QUESTION ONE [COMPULSORY] [30 MARKS]

- a) What do you understand by the term “Cable”. [2 marks]
- b) A non-governmental organization by the name “**Safe the Vulnerable African Child**” has opened up an office in Kisumu-Kenya. Intents to set up three regional operational sites in Western, Eastern and Rift valley for effective administration and service delivery to its clients. The organization has future plans of extending its services to Uganda, DRC Congo and Tanzania. You have just been appointed as the chief information Officer (**CIO**) to be in charge of the organization information systems and infrastructure development.
- i. Explain how you would convince the top management of the need for networking the head office. [12 marks]
- ii. If the management buys into your idea, in (i) above, explain in detail the type of network and any two network equipment you would plan for the task. [4 marks]
- iii. In two years, the organization plans to roll out its services to the countries named above. Describe the type of network you would plan for, mentioning any one technology and equipment you would use in this connectivity. [4 marks]
- iv. Explain briefly the use of IP address in computer networking. [3 marks]
- v) What determines the type of cable to be chosen for networking. [3 marks]
- vi. Distinguish between Static and dynamic IP address [2 marks]

### QUESTION TWO [20 MARKS]

- a) i. Discuss in detail how a network hub works. [4 marks]
- ii. With reference to repeaters, explain one advantage and two main disadvantage of bridges in networking. [3 marks]
- b) Briefly describe the following types of networks, stating the technology used in each.
- i. Wired network [2 marks]
- ii. Wireless network [2 marks]
- c) The star topology design would be appropriate for the head office in Nairobi. Explain two

- advantages and one disadvantage of this topology. [3 marks]
- d) What do you understand by the term “*Subnetting*”? [2 marks]
- e) What are routing protocols? [2 marks]
- f) Briefly explain why packets are used to transfer information over a shared medium. [2 marks]

### QUESTION THREE [20 MARKS]

- a) Explain the following terms as used in information exchange in internetworking.
- i. Frame [2 marks]
  - ii. Packet [2 marks]
  - iii. Datagram [2 marks]
- b) Describe the layers in the **OSI** reference Model. [14 marks]

### QUESTION FOUR [20 MARKS]

- a) State and explain the advantages of structured cabling. [10 marks]
- b) Differentiate between **TCP** and **UDP** protocols. [3 marks]
- c) Over the past years, the Internet has experienced two major scaling issues as it has struggled to provide continuous and uninterrupted growth. Outline these issues. [2 marks]
- d) Ethernet is a baseband system. Explain. [2 marks]
- d) The deployment of an IP addressing plan requires careful thought. Outline any three key questions that must be answered before any design should be undertaken. [3 marks]

**QUESTION FIVE [20 MARKS]**

a) Complete the table below with a matching cable type for the given specification:

<b>Specification</b>	<b>Cable Type</b>
10 Base T	
10 Base 2	
100 Base T	
100 Base FX	

[4 marks]

b) Wireless networks are much more susceptible to unauthorized use than cabled networks.

Explain the advantages of wireless networks.

[8 marks]

c) Distinguish between the following addressing types:

i. Classful IP addressing and Classless IP addressing

[2 marks]

ii. Class A and Class B IP addressing.

[4 marks]

d) Error-checking schemes determine whether transmitted data has become corrupt or otherwise damaged while traveling from Source to Destination. State any TWO error-checking schemes.

[2 marks]