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(Knowledge for Development)

KIBABII UNIVERSITY
(KIBU)

UNIVERSITY EXAMINATIONS
2024/2025 ACADEMIC YEAR

END OF SEMESTER EXAMINATIONS
YEAR TWO SEMESTER TWO EXAMINATIONS

FOR DIPLOMA
(INFORMATION TECHNOLOGY)

COURSE CODE : **DIT 0780**
COURSE TITLE : **SYSTEMS ADMINISTRATION**
AND NETWORK ADMINISTRATION

DATE: 22/04/2025 **TIME: 2.00PM -4.00 PM** **2HRS**

INSTRUCTIONS TO CANDIDATES

ANSWER QUESTIONS ONE AND ANY OTHER TWO.

QUESTION ONE (COMPULSORY) [24 MARKS]

- a. Explain system administration and network administration [3 mark]
- b. Highlight **FIVE** Roles of System Administrator. [5 marks]
- c. Outline **FIVE** server types [10 marks]
- d. Distinguish between public, private and special IP address. [3 marks]
- e. Subnet 192.168.43.0/24 into 3 networks to support 50 hosts [3 marks]

QUESTION TWO [18 MARKS]

- a. What are ethic codes of conduct of a network administrator in an organization? [2 marks]
- b. In addition to technical skills network administrator possesses, he/she must also present some competences. Highlight **FOUR** competences that network admin must possess. [4 marks]
- c. Differentiate between a server and a client in network administration [2 marks]
- d. Why do we need host name translation to the IP address? [3 marks]
- e. What is NAT, highlight **TWO** advantages of NAT [3 marks]
- f. What is SNMP, and how does SNMP protocol achieve network management function? [4 marks]

QUESTION THREE [18 MARKS]

- a. DHCP is an acronym for Dynamic Host Control Protocol, what is the function of DHCP in a network [2 marks]
- b. Explain the meaning of subnet mask and gateway [2 marks]
- c. There are reasons to why dynamic assignment is desirable, Explain three reasons [3 marks]
- d. While the client (which receives IP) and the server (which leases IP) are communicating, there are messages used, Discuss any **FIVE** DHCP message types [10 marks]
- e. What is an APIPA address, give an example of APIPA address [1 mark]

QUESTION FOUR [18 MARKS]

- a. List one example of class A, class B and Class C private IP addresses. [3 marks]
- b. What do you understand by **Subnetting** as used in network administration [2 marks]
- c. Determine the number of subnets, number of valid hosts per subnet, valid subnets, broadcast address of each subnet, and valid hosts in each subnet. Calculate for each:
 - i. A subnet mask 255.255.240.0 (/20) and network address 10.0.0.0 [5 marks]
 - ii. A subnet mask 255.255.255.192 (/26) and network address 10.0.0.0 [5 marks]

- d. As a network engineer, you are required to subnet 192.168.43.0/24 into 6 networks that will support several networks within an enterprise network. Show the useable and non-useable IPs. **[4 marks]**

QUESTION FIVE [18 MARKS]

- a. As a network administrator of an organization, how will you ensure that your network is secure? **[4 marks]**
- b. Differentiate corrective and preventive types of maintenance **[4 marks]**
- c. One of Linux's many advantages over Windows is that it is more secure, Explain three factors that makes Linux superior in security. **[6 marks]**
- d. What are the activities included in the scope of network maintenance by the network administrator. **[4 marks]**