Inspiring Innovation and Leadership

KARATINA UNIVERSITY

UNIVERSITY EXAMINATIONS
2023/2024 ACADEMIC YEAR

THIRD YEAR SECOND SEMESTER EXAMINATION

FOR THE DEGREE OF

BACHELOR OF SCIENCE IN INFORMATION TECHNOLOGY

COURSE CODE: BIT 325

COURSE TITLE: NETWORK ADMINISTRATION AND RESOURCE MANAGEMENT

DATE: 16TH APRIL 2024   TIME: 9.00 – 11.00 PM

INSTRUCTION TO CANDIDATES

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SECTION A (30 MARKS) –Compulsory

QUESTION ONE: (COMPULSORY) (30 MARKS)

a. Using examples, explain the following commands as used network configuration

   i.   Ipconfig   *occurs ...*   **(2 marks)**

   ii.   Ping   *... ...*   **(2 marks)**

   iii.   Traceroute   **(2 marks)**

b. Discuss any **THREE** disadvantages of outsourcing a network service   **(6 marks)**

c. You have been appointed as network administrator to oversee the design and configuration of LAN in a new block within the business premise. Then LAN will connect around 150 users on the network. These users will be working online and some will be connected to wireless fidelity.

Required:

   i.   Discuss any **THREE** factors you will consider when designing the LAN? **(6 marks)**

   ii.   Name the physical topology that will be considered and the reason why **(2 marks)**

   iii.   Which devices will be used in your LAN? List any **THREE**   *... ...*   **(3 marks)**

   iv.   Which type of transmission medium shall be used? Justify your answer **(2 marks)**

   v.   Draw a model of the sample LAN that will be implemented labeling all the devices and transmission medium used.   **(2 marks)**

d. Assume that you have been assigned a duty to check why a user PC is not connecting to the internet. What could be the possible causes of the above issue? State any **THREE**   **(3 marks)**

SECTION B (40 Marks) – Choose Any Two Questions

QUESTION TWO: (20 MARKS)

a. ABC limited has workstation A with IP 10.0.0.4 in LAN1, it wishes to communicate to workstation B with IP 192.168.0.8 in LAN2 over the internet. ISP has assigned LAN1 with public IP address 243.24.12.28. With the help of the diagram, describe how network address translator (NAT) with allow workstation A and B to communicate over to and from the internet clearly indicating the source and destination IP before and after translation to and from the internet   **(8 marks)**

b. Explain the TWO types of IP addresses used in computer networks   **(4 marks)**

c.

   i.   Using a diagram, describe how the ACLs work   **(4 marks)**

   ii.   Explain the TWO types of ACLs   **(4 marks)**

· QUESTION THREE: (20 MARKS)

a. Describe the work of a network administrator   **(3 marks)**

compliance —b. Discuss any **FIVE** network management challenges faced by network administrators
security -   **(10 marks)**
performance -
Scalability-   c.   i. Describe the DNS concept as used in computer networks   **(2 marks)**
processor   ii Using an example, describe the domain name system   **(3 marks)**
            iii. State the purpose of DNS   **(2 marks)**

²Translates Domainnames into matching Ip addresses to communicate to Netwo...

QUESTION FOUR: (20 MARKS)

a. i. Describe any FOUR challenges in computer networks when network administrator manually configuring network clients (8 marks)
   ii. How can we solve the above issues in (i) above faced by the network administrator? (1 mark)

b. Discuss any THREE types of network backup (6 marks)

c. i. What is network management? (1 mark)
   ii. Highlight any THREE services provided during network management (3 marks)
   iii. Describe the purpose of network management (2 marks)

QUESTION FIVE: (20 MARKS)

a. Using an example, describe the term network resource management (3 marks)

b.
   i. Describe the DHCP process of leasing IP address to DHCP clients (9 marks)
   ii. What is the default duration for an IP address leasing by the DHCP server (1 mark)
   iii. How many times does a DHCP client try to reach to the DHCP server when it doesn't receive an IP lease offer message? (1 mark)
   iv. When DHCP client receives no reply from DHCP server when trying to discover the server. How long will the DHCP clients take sleeping before trying again? 60 sec (1 mark)

c. Identify the port for following computer network protocols (5 marks)
   i. HTTP
   ii. HTTPs
   iii. Telnet
   iv. POP3
   v. IMAP