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University Examinations 2023/2024

SECOND YEAR, FIRST SEMESTER EXAMINATION FOR THE DIPLOMA IN
INFORMATION TECHNOLOGY

CIT 2310: NETWORK DESIGN

DATE: APRIL 2024

TIME: 1¹/₂ HOURS

INSTRUCTIONS:

1. Answer Question ONE, and any other TWO
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QUESTION ONE (30 MARKS)

- a) Define the following terms as used in networks (4 marks)
- (i) Topology
 - (ii) Adapter card
 - (iii) NOS
 - (iv) Modem
- b) Networks are differentiated with respect to their capability and coverage. State and explain any network types (6 marks)
- c) Describe the difference between the UTP cable and STP cable (2 marks)
- d) Define a protocol (1 mark)
- (i) List and explain protocols used in computer networks (3 marks)
- e) Define an operating system and explain its major functions (5 marks)
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- f) Define a server and explain any three types of servers (4 marks)
- g) Differentiate between the seventh layer and first layer of the OSI model (2 marks)
- h) Describe the roles of an NIC adapter card (3 marks)

QUESTION TWO (15 MARKS)

- a) Explain the major subcategories of topologies (2 marks)
- b) With an aid of a well labelled diagram explain the hierarchical star topology (4 marks)
- c) Sedik is a private investor; he wishes to have a physical layout of his new SME (Small Business Enterprise). Explain factors to consider before giving him your recommended layout (6 marks)
- d) Explain major causes of data corruption during data transfer (3 marks)

QUESTION THREE (15 MARKS)

- a) Describe the OSI model and state its governing body (2 marks)
- b) Explain the advantages of using the OSI model in the communication process (5 marks)
- c) Give a brief description of the following OSI model layers (8 marks)
- (i) Network layer
- (ii) Presentation layer
- (iii) Transport layer
- (iv) Data link layer

QUESTION FOUR (15 MARKS)



a) Explain the functions of the following network devices (10 marks)

(i) Router

(ii) Bridge

(iii) Switch

(iv) Repeater

(v) Gateway

b) Amos wants to set a cyber cafe at the town Centre that consists of 25 computers; he approaches you on the best way to interconnect the nodes together. Answer the following question:

(i) In interconnection of the devices to a LAN he may use a passive or active hub,

differentiate between the two

(3 marks)

(ii) List and describe the use of the devices that Amos is required to procure for this job. (2marks)