

**MAKERERE UNIVERSITY BUSINESS SCHOOL**  
**COURSE WORK TWO FOR THE DEGREE OF**  
**BACHELOR OF OFFICE AND INFORMATION MANGEMNET OF**  
**MAKERERE UNIVERSITY ACADEMIC YEAR 2025/2026**

**COURSE NAME : ENTERPRISE NETWORK ADMINISTRATION AND MANAGEMENT**

**YEAR OF STUDY : THREE**

**COURSE CODE : BUC3230**

**DATE : 13<sup>TH</sup> /04/2026-27<sup>TH</sup>/04/2026**

**SEMESTER : TWO**

**TIME : 00:0AM 13<sup>TH</sup>/04/2026– 11:59PM of 27<sup>TH</sup>/04/2026**

**COURSEWORK MODE: TAKE HOME**

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**INSTRUCTIONS**

1. Attempt **ALL** questions
2. Form groups of **not more than 6** members
3. To be submitted by **11:59PM of 27<sup>TH</sup>/04/2026**
4. The assignment should be typed, well-organized, and professionally presented.
5. Submit the following through **MUBSEP (zipped folder)**:
  - A Packet Tracer (.pkt) file of the configured network
  - A Cover page having group members names, Student Number, Registration Number details and a one-page document explaining your IP addressing scheme, subnetting choices, and router configuration

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**Question/Scenario [50 Marks]**

You have been hired as a Network Engineer in the Network Department of Makerere University Business School (MUBS). Your first assignment is to design and configure a network that enables seamless communication between different departments within the institution.

**Network Overview**

You are required to design a network that interconnects the following **five (5)** departments:

- **Main Building**
- **Main Library**
- **ADB (Computing & Informatics Office)**

- **Staff Resource Centre**
- **Dean's Office**

The Main Building has already been assigned the network **172.16.3.0/24**, and it will use a fixed network size (no subnetting is required).

For the remaining departments (**Main Library, ADB, Staff Resource Centre, and Dean's Office**), you have been allocated the network ID of **192.168.5.0/24**. You are required to subnet this network using **Variable Length Subnet Masking (VLSM)** to meet the different host requirements while ensuring efficient utilization of IP address space.

<b>Department</b>	<b>Network ID</b>	<b>Number of Hosts Needed</b>	<b>Description</b>
<b>Main Building</b>	172.16.3.0/24	Fixed size – No subnetting required	Main building network
<b>Main Library</b>	To be Determined	40 hosts	Library network for student and staff access
<b>ADB</b>	To be Determined	123 hosts	Computing & Informatics office network
<b>Staff Resource Centre</b>	To be Determined	18 hosts	Network for Lecturers
<b>Dean's Office</b>	To be Determined	10 hosts	Network for administrative staff

**REQUIRED:**

**1. Subnetting with VLSM (10 Marks)**

- Use **192.168.5.0/24** and apply **VLSM** to create four subnets that meet the specific host requirements for each department.
- Ensure that the subnetting is done efficiently with minimal wastage of IP addresses.
- Ensure there is no overlap between subnets.

**2. Design a Network Topology (20 Marks)**

- Use **Packet Tracer** to design the network.
- Include the necessary **intermediary devices** to interconnect the networks.
- Each subnet should have a minimum of **10 devices** connected (e.g., PCs, printers).

### 3. Router Configuration

(5 Marks)

- Configure the router interfaces for each subnet using the assigned IP addresses.
- Assign appropriate **default gateways** for each subnet.
- Enable inter-network communication through proper routing configuration.
- Ensure that all devices in the network can successfully communicate with each other.

### 4. Testing and Verification

(5 Marks)

- Test connectivity between devices across different networks using the **ping** command.
- Ensure that the default gateways are correctly configured and routes are properly established.

### 5. Documentation

(10 Marks)

- Provide a detailed explanation of your subnetting logic and router configuration choices.
- The document should not exceed **one page**.

### EXPECTED OUTCOME

- A fully functional network where devices in the **Main Building, Main Library, ADB, Staff Resource Centre, and Dean's Office** can communicate seamlessly.
- Correct implementation of **VLSM** to efficiently use the available IP addresses.
- Proper router configuration with correctly assigned default gateways.
- Successful connectivity between devices across different networks.

== *END* ==