Self-Learning Assignment

The University has recently built the IT Centre and department building. These building will house discussion rooms, department office, lecture halls, lectures room, laboratories meeting room and computer labs.

Eeach Building dimensions   (2 story building): Length: 70 meeters, Width: 30 meeters, Height: each floor 4 meeters.

You are requested to design a computer network to these   buildings of the   University with optimum use of network IP addresses. Available IP address range is 10.20.0.0/16
You should submit a report with the following details:
-   Network diagram (subnets and VLANs – provide IP addresses for each of them)
-   Write the steps on how to configure Routers and switeches.
-   WiFi Acdess points configruation details

Background information
IT Centre Block:
Number of data points 164:

Director Office – will be equipied with two desktop computers with network connection.

Network Manager Room – Network manager office will be equipied with one desktop computer with network connection.

2 Technical Officers Room – Each network officers room will be equipped with 1 Computers with network connection.

Staff Office   – will be equipped with 5 Computers with network connection.

Meeting Room- 2 data points (one for Video Conference Facility and one data points to connect computer) and WiFi Coverage

Lobby area   – WiFi Coverage

Computer Lab 1 – will be equipped with 60 Computers with network connection.

Computer Lab 2 – will be equipped with 60 Computers with network connection.

Digital Learning and Media Centre – will be equipped with 30 Computers and one printer with network connections.

Printing Room – will be equipped with two printers with network connection.

Department Block:
Number of data points 203:

4 lecture halls – Each lecture hall will be equipped with one desktop computer and one interactive multimedia projector with network connections.

14 staff rooms – Each staff room will be equipied with one desktop computer with netwok connection.

4 Technical Officers Rooms – Each technical officers room will be equipped with one

desktop computer.

Department Meeting Room – 2 data points (one for Video Conference Facility and one data points to connect computer) and WiFi Coverage.

Computer Lab 1 – will be equipped with 50 Computers with network connection.

Computer Lab 2 – will be equipped with 50 Computers with network connection.

Network Engineering Lab – will be equipped with 10 Computers with network connection.

Microprocessor Lab – will be equipped with 12 Computers with network connection.

Computer Vision and Machine Learning Lab - will be equipped with 50 Computers with network connection.

Department Office – will be equipped with 2 Computers with network connection and one printer with network connection.

Computers available at staff room can't be accessed from the network Engineering lab, department office, department meeting room, lecture halls, computer labs, Computer Vision and Machine Learning Lab, Microprocessor Lab, Technical Officers Rooms and the IT Centre (for security reason).

Computers available at the department office can't be accessed from the staff room, network Engineering lab, department office, department meeting room, lecture halls, computer labs, Computer Vision and Machine Learning Lab, Microprocessor Lab, Technical Officers Rooms and the IT Centre.

Requirement
- Printer available at the depratment office can only be accessed by the depratment staffs.
- Printer available at the IT Centre printing room can only be accessed by the IT Centre staffs.
- Each network node can only be accessed by the administator, not others.

Dead line : 4.00 pm on 15th May 2023