MITS4004

IT Networking and Communication

Weightage: 30%

Due date: Week 12

Group (up to 5 Members)

Late penalty applies on late submission, 10% per day would be deducted
0 mark for LATE Submission more than one week

You will be marked based on your submission on Moodle. You are most welcome to check your file with your lab tutor before your submission. **No excuse will be accepted** due to file corruption, absence from lecture or lab classes where details of lab requirements may be given.
Please make sure that you attend Lecture EVERY WEEK as low attendance may result in academic penalty or failure of this unit.

Student ID:

Student full name:

This assessment item relates to the unit learning outcomes as in the unit descriptors.

This assessment covers the following Learning Outcomes:

> L01: Identify the operation of the protocols that are used inside the Internet and use the seven-layer model to classify networking topology, protocol, and security needs.
> LO2: Evaluate LAN technology issues, including routing and flow control. Explain the difference between switches and routers. Build and troubleshoot Ethernet, Wi-Fi, and Leased line networks. Connect networks with routers.
> LO4: Apply the advanced knowledge gained to reflect on the security requirements of a network. Evaluate the issues that surround network applications such as quality of service (QoS) and network performance analysis. Be adaptable to changing requirements.

Case Study:

Your group is hired as a consultancy firm to set up a small private day-patient hospital network technology. The hospital has one building, 5 floors, Basement dedicated to secure car parking, Level 1 consists of a reception and a waiting room, Level 2 and 3 consistent of 2 operating theaters, 4 post-operative recovery rooms, Level 5 is the management, financial offices and the staff room.

Patients can access Wifi and there is an internal website – one page explaining how to get on to the network.

Staffing is as follows: 4 Management, 3 financial officers and 5 nurses and 3 doctors.

The nurses and doctors share 4 phones per each floor on Level 2 and Level 3. Management staff and financial officers have a phone each.

In Packet Tracker:

Construct the appropriate network technologies.

Separate Level 2 and 3 from other offices using VLANs.

Separate VoIP phones on VLAN 0.

Setup appropriate subnet

Config the wireless LAN.

Setup a WebSever for the website

Setup a DHCP server and a DNS server.

Enable routers to connect to each other.

Setup a STP.

Appropriate label your network diagram with annotation and background image.

Generate appropriate network traffic.

Show QoS (e.g. show policy-map interface serial 0/0/0) before and after simulation.

Throughout this assessment you may find the following CISCO packet tracer sample labs useful.

(File-> Open Samples) Wireless LAN, DHCP, Wireless, DNS, HTTPS, Wireless LAN Security

Remember to view the configuration of a CISCO box use the following command; enable, show run

Submit the following items:

In a **5-6 minute video demonstrate** your working Packet Tracer showing all features completed with appropriate traffic. Do NOT show you configuring them.

In a written report explain the following:

Explain the network subnets, super nets, etc (how did you implement and why. Broadcast address, network address, default gateway, host range)

Explain your topologies (e.g. why you uses switches/routers in the appropriate location)

Explain what security measures are in place or how the security could be improved.

Explain what your design reliability, redundancy and other features that may have.

Discuss in terms of OSI models, networking terminology, etc.

The word limit of the report is **1000 words.**

The cover page must specify student names, ID numbers, unit details, and assignment details.

The assignment must use a 12-point font size and at least single line spacing with appropriate section headings.

The report must be submitted in a soft (electronic) copy as a Microsoft Word document on the LMS in Turnitin enabled submission link.

Marking Guide: 100 Marks

Must make sure you use proper networking terminology. Suggest using a Network terminology cheat sheet.

Video (5-6 min video – 30 seconds per a tasks)	Marks
Topology layout (background setup, working, etc)	6
Demonstrated test cases of working phone calls	6
Demonstrated test cases of subnets	6
Demonstrated test cases of VLANs	6
Demonstrated test cases of DNS	6
Demonstrated test cases of WLAN	6
Demonstrated test cases of DHCP	6
Demonstrated test cases of websites	6
Demonstrated test cases of STP	6
Demonstrated test cases of QoS	6
(Full marks for using simulation traffic, 4 marks for command line tools, 2 mark for configuration)	
Report (1000 words)	
Explain the network subnets, super nets, etc (how did you implement and why. Broadcast address, network address, default gateway, host range)	8
Explain your topologies (e.g. why you uses switches/routers in the appropriate location)	8
Explain what security measures are in place or how the security could be improved.	8
Explain what your design reliability, redundancy and other features that may have.	8