



UNIVERSITY EXAMINATIONS
EXAMINATION FOR THE AWARD OF
DIPLOMA IN COMPUTER SCIENCE

COSC 0160: DATA COMMUNICATION AND COMPUTER NETWORKS

STREAMS: DIP (COMP SCI) Y1S2

TIME: 2 HOURS

DAY/DATE: MONDAY 06/14/2020

2.30 PM – 4.30 PM

INSTRUCTIONS:

- Answer question **ONE** and **TWO** other questions
- Do not write anything on the question paper
- This is a **closed book exam**, no reference materials are allowed in the examination room
- There will be **NO** use of mobile phones or any other unauthorized materials
- Write your answers legibly and use your time wisely.

SECTION A {Attempt ALL questions in this section}

QUESTION ONE (30 MARKS)

- a. Define the following terms
 - i. Data communication [2Marks]
 - ii. SMTP [2Marks]
 - iii. Bridge [2Marks]
 - iv. Protocol [2Marks]
 - v. PoE [2Marks]
- b. Distinguish between synchronous and asynchronous transmission [4Marks]
- c. State THREE advantages of wireless networks over guided networks [3Marks]
- d. Briefly discuss the TCP/IP model [3Marks]
- e. Discuss “multicast” LAN transmission method [2Marks]
- f. While stating what they stand for, distinguish between TCP and UDP [4Marks]
- g. Differentiate between packet switching and circuit switching [4Marks]

SECTION B (ANSWER ONLY TWO QUESTIONS)

QUESTION 2(20MARKS)

- a. For each of the following topologies state two advantages and two disadvantages and suggest the most appropriate among them.
- i. Bus topology [4Marks]
 - ii. Star topology [4Marks]
 - iii. Ring topology [4Marks]
- b. Briefly explain the concept of Nyquist theory [4Marks]
- c. A telephone system with modem allows bandwidth of 3100 Hz. Using Nyquist theory calculate the maximum data rate. [4Marks]

QUESTION 3 (20MARKS)

- a. Differentiate between intranet, extranet and internet. [6Marks]
- b. A complete communicating system will have several layers, using a diagram discuss the OSI model. [14Marks]

QUESTION 4 (20MARKS)

- (a) As a network architect, what factors do you consider when choosing a topology for a client. [10 marks]
- (b) Magunas supermarket wants to install a new POS (point of sale) system supporting 3 terminals and residing in 1 server. They have contacted you to install the POS. in order to install the POS, the supermarket needs a LAN network. Explain LAN installation process. [10 marks]

QUESTION 5 (20MARKS)

- a. Explain the following transmission modes in data communication, and give appropriate examples in each case
- i. Simplex [2Marks]
 - ii. Half- duplex [2Marks]
 - iii. Full – duplex [2Marks]
- b. Discuss FIVE hardware devices required to set up a network. [10Marks]
- c. Differentiate between bit rate and baud rate [4Marks]
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