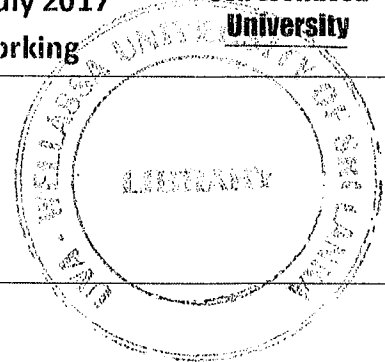


Uva Wellassa University of Sri Lanka
Faculty of Science and Technology
Department of Computer Science and Technology
300 level 1st Semester Examination – May/July 2017
SCT377-3 Data Communication and Networking



Instructions to candidates

Time allocation: Three (03) hours

Number of questions: Six (06)

Mark allocation: 100

Answer all the questions.

1.
 - a. List the five (05) components of data communication system. (2 mark)
 - b. Briefly explain the main four (04) characteristics that are used to measure the effectiveness of communication. (4 mark)
 - c. What are the differences between Metropolitan Area Network (MAN) and Wide Area Network (WAN)? (4 mark)

2.
 - a. Briefly explain the transmission impairments. (6 mark)
 - b.
 - i. The power of a signal is 10mW and power of the noise is $1\mu\text{W}$. What is the value of Signal To Noise Ratio (SNR)? (2 mark)
 - ii. Calculate SNR_{dB} using the value of SNR. (2 mark)

3.
 - a. How do the layers of the TCP/IP model correlate to the layers of the OSI model? (5 mark)
 - b. Describe the functions of the 'Physical Layer' in the OSI model. (10 mark)
 - c. What are the importances of the layers of OSI model to the network administrator? (5 mark)

4.
 - a. How does a single-bit error differ from a burst error? (4 mark)
 - b. What is the difference between forward error correction and backward error correction in data transmission? (6 mark)
 - c. Sender transmits a codeword as 1010010. At the receiving end, receiver got the message as 1010011. State the position of the error using Hamming Code (7, 4). (10 mark)

5.
 - a. Why does congestion occur within a packet-switched network? (6 mark)
 - b. Name the policies that can prevent congestion in open loop congestion control technique. (6 mark)
 - c. Briefly describe the 'Leaky Bucket Algorithm' in open loop congestion control. (8 mark)

6. Write short notes for the following topics.

- a. IPv4 Addresses
- b. Network topologies
- c. Unguided transmission Media
- d. Stop and Wait protocol

(4 x 5 mark)