



Horizon College of Business and Technology

Faculty of Information Technology

BSc (Hons) Information Technology / BIT (Hons) in Network and Mobile Computing

Third Year First Semester Examination (Online) – September 2020

IT31013: Network Performance Analysis

Time allowed: **Three (03) hours** (9.00 a.m. - 12.00 noon) **3 Pages** **5 Questions**

INSTRUCTIONS:

1. Answer ALL the Questions.
 2. If you do not have a laptop/PC take a piece of paper and write your index number (E.g.; IT2018601) on the top of each and every paper. Then write the answer(s) by clearly mentioning question numbers, page numbers, and then take a photo of the answer sheet and upload the documents via LMS and email as instructed below.
 3. **Submit your answers before 12.20 p.m.** Answers submitted after 12.20 p.m. will not be accepted.
 4. Please avoid multiple submissions of your final exam answer script.
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METHOD OF SUBMISSION:

1. Complete the Submission Sheet.
 2. Make sure that all pages are attached to the email as a **PDF document**.
 3. In the email, the subject line should be according to format given below.
<Course Code> <Course Name> <your Index No>
E.g.; **the subject line of email will be:**
IT31013 Network Performance Analysis IT**2018601**
 4. If handwritten, attach the photograph of the COMPLETED Submission Sheet with your signature and then answer script of your final exam (complete document).
 5. Email your answer script of your final exam paper to **hcit0001@gmail.com**
 6. In addition, **submit your answers via LMS** link provided.
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IMPORTANT: Academic dishonesty and plagiarism

Academic dishonesty involves any attempt to gain academic advantage by doing something misleading or unfair. Attempting to communicate with or copy from another student during an exam is considered as a serious examination violation. If found to be copied or any form of plagiarism, an inquiry will be held once the Campus starts. Marks and the grades of such instance will not be released and students may have to **repeat the whole examination** in such occasions.

You are hereby advised NOT to involve in any such activities during this examination.

Question 01**(Total 20 Marks)**

- a) Write four (4) fields, and its purpose in *IP datagram*. (8 Marks)
- b) Draw the UDP datagram format with proper field names. (4 Marks)
- c) “*UDP is still unreliable, but some applications are used*”. Give two (2) reasons for typical applications of UDP. (4 Marks)
- d) Discuss two (2) applications of TCP. (4 Marks)

Question 02**(Total 20 Marks)**

- a) Explain what is meant by *MAC address* with suitable examples. (2 Marks)
- b) “*ARP provides mapping*”. Briefly discuss with a proper example for ARP mapping. (3 Marks)
- c) “*TCP-Client and TCP-Server connection process have three phases*”. Describe the three phases with examples. (6 Marks)
- d) What are the three problems that should be addressed in the data transfer process? Explain each of them. (9 Marks)

Question 03**(Total 20 Marks)**

- a) Write the four (4) factors that are decided on *application layer buffers* and *TCP layer buffer* sizes. (4 Marks)
- b) “*The port numbers are divided into three ranges*”. Discuss two (2) of them with suitable examples. (8 Marks)
- c) “*TCP segment consists of data and header*”. List the four (4) fields in the header of the TCP segment. (4 Marks)
- d) Explain the *piggybacking* with a suitable example in TCP data transferring. (4 Marks)

Question 04**(Total 20 Marks)**

- a) Explain *Round Trip Time (RTT)* with a suitable example. (4 Marks)
- b) What are the two reasons that the receiver TCP buffer can be overflowed? (4 Marks)
- c) What is the window size? Describe it with a suitable scenario. (4 Marks)
- d) Describe the four (4) UDP port numbers related to protocols. (8 Marks)

Question 05**(Total 20 Marks)**

- a) Briefly explain the following Linux performance analysis commands with a suitable example. (10 Marks)
- i. vmstat
 - ii. top
 - iii. Netstat
 - iv. Ipref
 - v. isof
- b) What is *Wireshark*? (2 Marks)
- c) Write the purpose of following display filters in *Wireshark*. (8 Marks)
- i. ip.addr == 192.168.1.100
 - ii. tcp.port == 80 || udp.port == 80
 - iii. !(ip.addr == 192.168.1.1)
 - iv. eth.addr == d0:53:49:c3:45:3c
