UNIVERSITY EXAMINATIONS

EXAMINATION FOR SEPTEMBER / DECEMBER 2018/2019

FOR BACHELOR OF SCIENCE IN COMPUTER SCIENCE

DISTRIBUTED COMPUTING SYSTEMS

COURSE CODE: RCS313 – EXAMINATION PAPER

DATE _____ TIME: 2 HOURS

GENERAL INSTRUCTIONS:

This is a closed book examination. Text book/Reference books/notes are not permitted.

Students are NOT permitted to write on the examination paper during examination time.

SPECIAL INSTRUCTIONS:

This examination paper consists Questions in Section A followed by section B

Question Section A is compulsory. Answer any other two questions in section B.

QUESTIONS in ALL Sections should be answered in answer booklet(s).

1. **PLEASE start the answer to EACH question on a NEW PAGE.**
2. **Keep your phone(s) switched off at the front of the examination room.**
3. **Keep ALL bags and caps at the front of the examination room and DO NOT refer to ANY unauthorized material before or during the course of the examination.**
4. **ALWAYS show your working.**
5. **Marks indicated in parenthesis i.e. ( ) will be awarded for clear and logical answers.**
6. **Write your REGISTRATION No. clearly on the answer booklet(s).**
7. **For the Questions, write the number of the question on the answer booklet(s) in the order you answered them.**
8. **DO NOT use your PHONE as a CALCULATOR.**
9. **YOU are ONLY ALLOWED to leave the exam room 30minutes to the end of the Exam.**
10. **DO NOT write on the QUESTION PAPER. Use the back of your BOOKLET for any calculations or rough work.**

QUESTION SECTION A: ANSWER ALL QUESTIONS IN THIS SECTION.

Question One (30 Marks)

(a) Discuss the meaning of following terminologies in relations to Distributed Systems **(10Marks)**

(i) Web Enabled Services

(ii) Information Richness

(iii) Virtual Private Network

(iv) Middleware

(v) Ubiquity

(b) Describe FIVE types of hardware resource and FIVE types of software resource that may be useful in sharing data in the Distributed Systems. Give examples **(10 Marks)**

(c) Distinguish FIVE critical attributes for an effective and efficient Distributed network. **(5 Marks)**

(d) Explain how it is possible for a sequence of packets transmitted through a wide area Distributed Systems network to arrive at their destination in an order that differs from that in which they were sent in comparison to a local LAN network **(5 Marks)**

QUESTION SECTION B: ANSWER ANY TWO QUESTIONS IN THIS SECTION

Question Two (20 Marks)

(a) Using a sketch diagram for a five layers OSI protocol suite in the Distributed Computing Systems, define the role and importance of each layer in data transportations **(10 Marks)**

(b) Discuss the key differences between a physical address, a network address, and a domain name **(6 Marks)**

(c) Define the applications of the two Internet Protocol – UDP and TCP **(4 Marks)**

Question Three (20 Marks)

(a) Compare and contrast WWW Distribution Systems with traditional client-server computing. **(6 Marks)**

(b) Explain what happens to the physical address and the IP address when a computer is moved from one department to another **(4 Marks)**

(c) State the role of communication security, digital signature and authentication protocols **(6 Marks)**

(d) Describe how you would configure a firewall to protect the local network at Riara University. **(4 Marks)**

Question Three (20 Marks)

(a) Discuss the THREE main advantages of Distributed System data processing **(6 Marks)**

(b) Discuss two advantages of each of the following Distributing Computing Systems in locating resources: **(6 Marks)**

(i) Internet System

(ii) intranet System

(iii) Extranet System

(c) Describe how the Distribution Systems implement fault tolerance and recovery processes **(4 Marks)**

(d) Explain how Leaky Bucket and Token Bucket algorithm works in the Distributed Networks **(4 Marks)**

Question Four (20 Marks)

(a) Explain how a personal digital assistant (PDA) user who arrives at a railway station that s/he has never visited before, carrying that is capable of using a wireless networking **(5 Marks)**

(b) Discuss how the PDA user could be provided with information about the local services and amenities at that station, without entering the station's name or attributes **(10 Marks)**

(c) Explain technical challenges the user must be able to overcome in his journey **(5 Marks)**