Universiti Tun Hussein Onn Malaysia

UNIVERSITI TUN HUSSEIN ONN MALAYSIA

FINAL EXAMINATION
SEMESTER I
SESSION 2019/2020

COURSE NAME	:	DISTRIBUTED SYSTEMS
COURSE CODE	:	BIE 33203
PROGRAMME CODE	:	BIE
EXAMINATION DATE	:	DECEMBER 2019 / JANUARY 2020
DURATION	:	3 HOURS
INSTRUCTION	:	ANSWER **ALL** QUESTIONS

THIS QUESTION PAPER CONSISTS OF **FOUR (4)** PAGES

SECTION A

Explain the terms shown below.

Q1 (a) Loosely coupled

(b) Content Delivery Network (CDN)

(c) Middleware

(d) Parallel programming

(e) Thin-client

(f) Apache Hadoop

(g) MapReduce

(h) Blockchain

(i) No-sql

(j) Thread

(20 marks)

SECTION B

Q2 (a) Differentiate between distributed system and grid computing.
(4 marks)

(b) How distributed systems can overcome memory constraint?
(4 marks)

(c) Why heterogeneity is a challenge to distributed systems?
(4 marks)

(d) Why failure handling is important in distributed systems?
(4 marks)

(e) What is the impact of scalability for a distributed systems?
(4 marks)

Q3 KM IT Resources Sdn Bhd is expanding its e-Learning web based solution to another 10 countries in the world.

(a) Propose an appropriate distributed system model for this project.
(10 marks)

(b) Illutrate your suggested model in **Q3(a)**.
(10 marks)

Q4 Discuss the implementation of distributed systems implementing distributed ledger. You need to use these terms in your answer: *bitcoin*, *distributed ledger*,*blockchain* ,*consensus* , *proof of work* and *smart contract*.
(20 marks)

Q5 (a) Differentiate between Remote Procedure Call (RPC) and Remote Method Invocation (RMI).

(4 marks)

(b) Illustrate RPC using a diagram.

(5 marks)

(c) Illustrate RMI using a diagram.

(5 marks)

(d) Discuss the illustration for RMI in **Q5(c)** using marshalling and unmarshalling.

(6 marks)

- END OF QUESTIONS -