LIT
DEPARTMENT OF
INFORMATION TECHNOLOGY

Semester: Semester 2 (Summer 2016/17)

Date/Time: Monday 8th May 2017, 9:30 AM – 11:30 AM

Programme: Bachelor of Science (Honours) in Computing (Games Design and Development)
Bachelor of Science (Honours) in Computing (Software Development)

Stage: 4

Module: DISTRIBUTED ALGORITHMS

COMP 8024

Time Allowed: 2 hours

Instructions: Attempt any four (4) questions

Additional Attachments: None

External Examiners: Derek O'Reilly
Internal Examiners: Janice O'Connell, Eugene Kenny

Question No. 1 **(25 Marks)**

(a) Discuss the goals of a distributed system. *(10 marks)*

(b) Outline the common architectural styles found in distributed systems. *(15 marks)*

Question No. 2 **(25 Marks)**

(a) What is code migration? Explain the difference between strong and weak mobility. *(10 marks)*

(b) Stream-oriented communication offers support for continuous media. How is the achieved? *(15 marks)*

Question No. 3 **(25 Marks)**

(a) Outline how Distributed Hash Tables (DHT) work. *(15 marks)*

(b) Describe how Remote Method Invocation (RMI) works with particular reference to how it can be implemented in Java applications. *(10 marks)*

Question No. 4 **(25 Marks)**

(a) In continuous consistency, consistency is measured in three different dimensions. What are those three dimensions, and for each one, give an example illustrating its use. *(15 marks)*

(b) Explain how Lamport's logical clocks work. *(10 marks)*

Question No. 5 **(25 Marks)**

(a) Define reliable multicasting. What is a reliable multicast that is virtually synchronous? *(10 marks)*

(b) Explain why virtual synchrony is so convenient for applications. *(15 marks)*