UNIVERSITY OF MORATUWA
Faculty of Information Technology

Bachelor of Information Technology (BIT)
Level 3 – Semester 1 (Repeat) Examination

ITE 3106- Advanced Software Engineering

Time Allowed: 3 hours | February 2017

INSTRUCTIONS TO CANDIDATES

1. This paper contains 5 questions on 3 Pages.
2. The total marks obtainable for this examination is 100. The marks assigned for each question & sections there of are included in square brackets.
3. This examination accounts for 60% of the module assessment.
4. This is a closed book examination.
5. Calculators are not allowed.
6. Answer **All** questions.

ADDITIONAL MATERIAL

None

Continued…

Question 1

(a) Define the term "Formal Specification" and discuss the necessity of such specifications in critical software development.

[05 Marks]

(b) An essential part of the specification process is to define sub – system interfaces. Discuss the required activities for developing the formal specifications of a sub-system interface.

[05 Marks]

(c) List down four advantages and four disadvantages of distributed systems. List down two distributed systems architectures.

[05 Marks]

(d) Briefly discuss the distributed object architecture mentioning its main components by using a diagram.

[05 Marks]

Question 2

(a) Define a real-time processing system by giving two examples.

[05 Marks]

(b) Define the term application architecture and explain how it differs from software architecture.

[05 Marks]

(c) Discuss the strengths and weaknesses of Java programming language in real- time software developments.

[05 Marks]

(d) How do the design patterns help to reuse software?

[05 Marks]

Question 3

(a) What is the purpose of software inspection? Describe Briefly.

[05 Marks]

(b) Define the term cleanroom software development.

[05 Marks]

(c) What are software process metrics and product metrics?

[05 Marks]

(d) What are the three major factors in process measurement?

[05 Marks]

Question 4

(a) Describe three complementary approaches to developing dependable software.

[05 Marks]

(b) Describe two approaches for software fault tolerance.

[05 Marks]

(c) Discuss the suitability of Java programming language for developing dependable software.

[05 Marks]

(d) What are the key objectives of information security?

[05 Marks]

continued ...

Question 05

(a) Why is business process re-engineering essential for an organization?

[05 Marks]

(b) How does Information Technology help for business process improvement?

[05 Marks]

(c) What is the difference between software re-engineering and reverse engineering?

[05 Marks]

(d) What are the benefits of software restructuring?

[05 Marks]

END OF PAPER