Athlone Institute of Technology

School of Engineering

Semester 1 Examinations 2014

December Session

Bachelor Of Science In Software Design

Year 3

Software Quality and Process Improvement

External Examiner(s): **Dr. Chris Exton**
Mr. Damien Marshall

Internal Examiner(s): **Mr. Michael P. Russell**

Instructions to candidates:

Read **all** questions carefully.

All questions carry equal marks.

Answer **Three** out of **Four** questions.

Time Allowed: 2 hours.

No. of pages including cover sheet: 3

Q.1.

(a) Identify and explain typical attributes that should be employed in a generic Process Description Template to describe a Software Engineering Process.

(10 marks)

(b) In the context of the Capability Maturity Model Integration (CMMI), the following terms are employed to describe the model:

> Process Area, Specific Goals, Generic Goals, Specific Practices, Generic Practices, Typical Work Products, and Sub-practices.

Define each term listed. Identify and describe the relationship of the terms to each other.

(10 marks)

[20 marks]

Q.2.

(a) What are the important differences between the agile approach and the process maturity approach to software process improvement?

(8 marks)

(b) Explain how the principles underlying agile methods lead to the accelerated development and deployment of software.

(12 marks)

[20 marks]

Q.3.

(a) List and justify 4 questions that should be asked when deciding whether or not to adopt a plan driven method of software development. (4 marks)

(b) Explain how standards may be used to capture organizational wisdom about effective methods of software development. Suggest four types of knowledge that might be captured in organizational standards. (8 marks)

(c) Assume y

and process metrics that the organisation might employ. Also identify how these metrics can be collected.
(8 marks)

[20 marks]

Q.4.

(a) Imagine the situation where two developers are simultaneously modifying three different software components. What difficulties might arise when they try to merge the changes that they have made? (4 marks)

(b) Describe four difficulties that may arise when building a system from its components. What particular problems might occur when a system is built on a host computer for some target machine? (4 marks)

(c) Describe in detail how a Software Project Manager can employ a Software Configuration Management (SCM) Process with a defined Software Process Lifecycle to manage and control the development of new software systems or the maintenance of existing software systems. (12 marks)

[20 marks]