DUBLIN CITY UNIVERSITY

AUGUST/RESIT EXAMINATIONS 2017/2018

MODULE: CA4004 - Soft. Eng.:Process,Principles & Methods (C)

PROGRAMME(S):

CASE	BSc in Computer Applications (Sft.Eng.)
EC	BSc in Enterprise Computing
ECSAO	Study Abroad (Engineering & Computing)

YEAR OF STUDY: 4,O

EXAMINER(S):

Dr. Paul Clarke	(Extn. 7021)
Dr. Samia Kamal	(External)
Dr. Robert Gleasure	(External)
Dr. Hitesh Tewari	(External)

TIME ALLOWED: 3 Hours

INSTRUCTIONS: **Answer question 1 and any three other questions.**

PLEASE DO NOT TURN OVER THIS PAGE UNTIL YOU ARE INSTRUCTED TO DO SO.
The use of programmable or text storing calculators is expressly forbidden.
Please note that where a candidate answers more than the required number of questions, the examiner will mark all questions attempted and then select the highest scoring ones.

There are no additional requirements for this paper.

QUESTION 1 ***[TOTAL MARKS: 40]***

Q 1(a) **[10 Marks]**

Identify five important characteristics of typical commercial software development companies that necessitate the implementation of robust software development processes. In each case offer a brief explanation of why each characteristic necessitates software process implementation.

Q 1(b) **[10 Marks]**

In your opinion, is the selection of a software development process for an organisation a complicated undertaking? Justify your response with a detailed explanation that includes specific examples.

Q 1(c) **[10 Marks]**

In your own words, describe the *technical debt* concept as relevant to software development, clearly identifying different types of technical debt.

Q 1(d) **[10 Marks]**

In your opinion, is technical debt more likely to arise in traditional software development approaches or in agile software development approaches? Justify your response with a clear explanation, including specific examples.

[End of Question1]

QUESTION 2 ***[TOTAL MARKS: 20]***

Q 2(a) **[8 Marks]**

Outline the structure and content of the Boehm-Turner Model for balancing discipline and agility, making use of a figure as appropriate.

Q 2(b) **[5 Marks]**

Making use of a diagram, describe how the Boehm-Turner Model can be used in practice in order to define and elaborate software development processes.

Q 2(c) **[7 Marks]**

Discuss any inadequacies that you perceive in the Boehm-Turner model, providing a clear explanation and examples as appropriate.

[End of Question2]

QUESTION 3 ***[TOTAL MARKS: 20]***

Q 3(a) **[5 Marks]**

Outline the meaning of the term *DevOps* in the context of software development, and clearly identify how DevOps differs from agile software development.

Q 3(b) **[10 Marks]**

DevOps advocates that development organisations should adopt the *treat infrastructure as code* concept. Clearly explain what is intended by this concept, identifying some principles associated with treating infrastructure as code.

Q 3(c) **[5 Marks]**

In your opinion, has DevOps helped to improve the smooth operation of software development organisations? Justify your response with clear reasoning.

[End of Question3]

QUESTION 4 ***[TOTAL MARKS: 20]***

Q 4(a) **[10 Marks]**

In the context of agile software development, what in your opinion is the primary method by which requirements may be explicitly documented, and what are the strengths and weaknesses of this approach? Provide examples as appropriate.

Q 4(b) **[5 Marks]**

Using a diagram, briefly outline the process of formal transformation as applied in the development of software systems.

Q 4(c) **[5 Marks]**

In your opinion, how might formal transformation be utilised in the context of agile software development?

[End of Question4]

QUESTION 5 ***[TOTAL MARKS: 20]***

Q 5(a) **[5 Marks]**

Briefly outline five distinct characteristics of individual software requirement statements.

Q 5(b) **[8 Marks]**

Identify and describe four distinct design guidelines for security engineering in a software development context.

Q 5(c) **[7 Marks]**

In your own words, describe the process of refactoring, clearly identifying specific examples of where refactoring may be warranted.

[End of Question5]

[END OF EXAM]