DUBLIN CITY UNIVERSITY

SEMESTER 2 EXAMINATIONS 2016/2017

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):

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Dr. Robert Gleasure
Dr. Ian Pitt
Dr. Samia Kamal

TIME ALLOWED: 3 Hours

INSTRUCTIONS: You MUST answer question 1 and any 3 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) **[6 Marks]**

Provide a definition for the term "software development process".

Q 1(b) **[6 Marks]**

Identify and briefly explain three advantages to having a documented software development process.

Q 1(c) **[9 Marks]**

It is sometimes claimed that a documented process is preferable to an undocumented process. Discuss your view on this claim, using examples as you deem appropriate.

Q 1(d) **[4 Marks]**

In your opinion, what is the best software development process? Support your opinion with a clear explanation and two examples.

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

Identify five differences between typical university-based student assignments and commercial software development. For each difference, briefly explain the impact from a software process perspective.

Q 1(f) **[5 Marks]**

In your opinion, is the call for "better, faster, cheaper software" realistic for the software development business? Justify your response with clear reasoning.

[End of Question 1]

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

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

Identify and offer a brief description for four primary properties of dependable systems.

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

Provide a description for the terms *diversity* and *redundancy* as relevant for dependable systems, and provide one example of how diversity and redundancy can be achieved in practice.

Q 2(c) **[4 Marks]**
Briefly describe the roles of *splitters* and *comparators* in self-monitoring architectures.

[End of Question 2]

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

Q 3(a) **[8 Marks]**
Briefly describe two advantages and two disadvantages to using software development formal methods.

Q 3(b) **[8 Marks]**
In the context of formal methods for software development, explain the role of model checking, using a diagram if appropriate.

Q 3(c) **[4 Marks]**
Identify a scenario in which you would advocate the use of model checking (clearly explaining why the scenario warrants the adoption of model checking).

[End of Question 3]

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

Q 4(a) **[8 Marks]**
In the context of the two industrial speakers who presented to the class during the semester, discuss the role of organisational culture in software development process adoption.

Q 4(b) **[6 Marks]**
Making use of a diagram, explain the general workings of the defect amplification model.

Q 4(c) **[6 Marks]**
Making use of a defect amplification example, demonstrate how reviewing (e.g. design reviews and code reviews) can improve overall software quality.

[End of Question 4]

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

Q 5(a) **[4 Marks]**
Provide a definition for Continuous Software Engineering.

Q 5(b) **[10 Marks]**
Identify and briefly describe five key technology enablers for Continuous Software Engineering.

Q 5(c) **[6 Marks]**
Propose and briefly discuss three possible disadvantages that may arise when adopting a Continuous Software Engineering approach.

[End of Question 5]

[END OF EXAM]