GALWAY-MAYO INSTITUTE OF TECHNOLOGY

SEMESTER 2 EXAMINATIONS 2016/2017

MODULE: COMP08013 - Software Engineering

PROGRAMME(S):
GA_KSOFG_H08 BACHELOR OF SCIENCE (HONOURS) IN SOFTWARE DEVELOPMENT

YEAR OF STUDY: 4

EXAMINER(S):

GARRETT JORDAN	(Internal)
Mr. Tom Davis	(External)
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TIME ALLOWED: 2 Hours

INSTRUCTIONS: **Answer 3 questions. All questions carry equal marks.**

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: 33]***

Q 1(a) **[7 Marks]**

What are the four most important attributes which all software products should have? Suggest other attributes you consider are important.

Q 1(b) **[8 Marks]**

One of the reasons why some apparently simple activities cannot be fully computerised is the need for tacit knowledge. Provide an example of an activity which involves tacit knowledge.

Outline the advantages of retaining some level of human processes within a business system.

Q 1(c) **[12 Marks]**

Identify the maintenance classification:

- A database is storing data in such a way that it is causing problems for other systems within the company.
- A company has introduced a online system for customers to place orders. The online system needs to be integrated into their normal ordering system.
- A bank decides to offer a new mortgage product. This will have to be included in the system so that mortgage interest and payments can be calculated.
- A more advanced help system is added to the current system.
- A better data input screen is added to a part of the current system.
- An individual bought an incandescent light bulb. The manufacturing company mentioned that the life span of the bulb is 3 years. Just before the 3 years, the individual decided to replace the bulb with a new one.

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

Under what circumstances might an organization decide to scrap a system when the system assessment suggests it is of high quality and high business value?

QUESTION 2 ***[TOTAL MARKS: 33]***

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

Outline the reasons why the requirements for a software system may be inconsistent.

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

Differentiate between Functional and Non Functional requirements?

Which requirements would you consider to be more critical in the software development process? Give a reason for your answer.

Q 2(c) **[11 Marks]**

(i) Write a set of plausible user requirements for a Login Screen for a GMIT Internet Banking site.

(ii) Write out a set of non functional requirements for the Login Screen for the GMIT Internet Bank site.

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

What kinds of errors are sought during requirements validation?

QUESTION 3 ***[TOTAL MARKS: 33]***

Q 3(a) **[7 Marks]**

Can risks be ignored during agile software development?

Q 3(b) **[12 Marks]**

Discuss some risks that may arise in software projects under THREE of the following headings.

- Technology
- Staff
- Business Impact
- Customer
- Product Size

Q 3(c) **[7 Marks]**

A software-development company specialising in safety-critical systems, wishes to reduce the risk of 'failure during operation' of any of the software in their portfolio of application by fifty per cent. Advise this company on how they should proceed and what they should do in order to attain such a goal.

Q 3(d) **[7Marks]**

Fixed price contracts may be used to move project risk from client to contractor. Suggest how the use of such contracts may increase the likelihood that product risks will arise.

QUESTION 4 ***[TOTAL MARKS: 33]***

Q 4(a) **[9 Marks]**

Explain the benefits of Prototyping when used in the software development process.

What is the objective of Throw-away Prototyping?

Explain why the throw-away prototype should not be considered as a final system.

Q 4(b) **[7 Marks]**

Explain why test first development helps the programmer develop a better understanding of the systems requirements.

What are the potential difficulties with test first development?

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

Differentiate between the roles of Product Owner and scrum master as related to SCRUM in an agile environment:

Who may terminate a sprint in Scrum outline the circumstances when this may arise.

Q 4(d) **[7 Marks]**

Typical advice to software development teams working in an agile environment would be:

"Start with Scrum and then invent your own version of Extreme Programming(XP)." Provide a discussion which contrasts the differences between SCRUM and Extreme Programming(XP).

QUESTION 5 ***[TOTAL MARKS: 33]***

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

Differentiate between static testing and dynamic testing. Describe the key approach used in static testing.

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

Traceability between requirements and test cases can help to show that the system does what it is intended to do.

What can be done in order to minimise the risk of the system doing what it shouldn't?

Q 5(c) **[12 Marks]**

There are many strategies that can be used to test software. Describe FOUR kinds of tests which should be considered.

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

Discuss which tests should be automated. When is it not suitable to perform automation?