



Institiúid Teicneolaíochta, Trá Lí
INSTITUTE OF TECHNOLOGY TRALEE

WINTER EXAMINATIONS AY 2013-2014

Software Engineering

SWDV81011
CRN 45212

External Examiner: Mr Damian Gordon
Internal Examiner: Ms Catherine Woods

Duration: 2 Hours

Instructions to Candidates: Answer Question 1 and *two* other questions

Question 1:

[40 marks]

- (a) What is a *program specification* and what components are typically found in a program(10 marks) specification.
- (b) Outline the phases, activities and benefits of the *Waterfall* process model. (10 marks)
- (c) What factors, in your opinion, contribute to effective people management and what information should be considered when selecting staff for a project team? (10 marks)
- (d) In relation to the *Scrum* framework, discuss the following: (10 marks)
 - Scrum Roles
 - Scrum artifacts
 - Planning and Review meetings

Question 2:

[30 marks]

- (a) Describe, in detail, Data Flow Diagrams as a logical modelling technique. (8 marks)
- (b) A small wholesaler has decided to install a computerised system to handle day to day (10 marks) administration. The analyst has conducted a preliminary requirements elicitation and has identified three main components for the proposed system: *Stock, Orders* and *Payments*.

Identify and discuss the *essential* functional requirements which you feel the system must provide and **three** non-essential functions which you feel the system should provide.

Summarise the functional requirements discussed as a set of *User Requirements*.

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- (c) Using the user requirements listed in (b) above: (12 marks)
- (i) Show the functional components of the system as a hierarchy chart.
 - (ii) List the *external entities*, *data stores* and *processes* required to implement the above system.
 - (iii) Draw a Level-0 and Level-1 DFD for the proposed system.
 - (iv) Draw a Level-2 DFD for **one** module of the proposed system
 - (v) Give comprehensive file structures for any data stores in the proposed system.

Question 3:

[30 marks]

- (a) Discuss the human factors which have led to a set of general UI design principles. (15 marks)
- (b) Describe the different ways in which information can be presented on an interactive user interface. Your answer should make reference to the presentation of textual, graphical, dynamic and static information. (10 marks)
- (c) What consideration should be given to the use of colour in a user interface? (5 marks)

Question 4:

[30 marks]

- (a) What is **UML** and what role does it play in the software development process? (10 marks)
- (b) Describe the characteristics and objectives of *Use Case Modelling*. (10 marks)
- (e) Explain how class diagrams are used to model the data requirements of a system. Your answer should make reference to association, aggregation, generalisation and multiplicities. (10 marks)