INSTITUTE OF TECHNOLOGY TRALEE

WINTER EXAMINATIONS AY 2015-2016

## Software Engineering

## Module Code SWDV81001
## CRN 45212

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**Internal Examiner(s)**:      Ms. Catherine Woods

**Duration**:      2 Hours

**Instructions to Candidates**:  This paper contains four questions. Answer any *three* questions.

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### Question 1 [30 Marks]

**a)** What is *Prototyping* and why is it used in the software engineering process? **(4 marks)**

b) Explain the difference between static and dynamic information on a UI.
Give an example of each from every-day systems we use. **(8 marks)**

**c)** What consideration should be given to the following when designing a UI: **(12 marks)**
- Positioning of controls
- Use of white space
- Images & Icons
- Fonts / Colours

d) What is meant by *usability* of a UI and how is the usability of a UI determined? **(6 marks)**

### Question 2 [30 Marks]

(a)    What methods are typically used in requirements elicitation? **(4 marks)**

(b)    What is *Requirements Specification* and how might a requirements specification be delivered? **(4 marks)**

**(c)**    Who are the target readers of a requirements specification document? **(4 marks)**

(d)    Explain the difference between a *User Requirement* and a *System requirement*. **(6 marks)**
Give an example of both.

(e)    In relation to the process of *Requirements Specification* explain the terms: **(6 marks)**
1.    Expected Scenario
2.    Alternate Scenario
3.    Business Rule

(f)    What is a UML class diagram what does it model and when is it used in the software development process? **(6 marks)**

**Question 3 [30 Marks]**

(a)  Describe Data Flow Diagrams as a logical modelling technique.                    **(5 marks)**

(b) A Regional library has decided to install a computerised system to handle day to day
administration. The analyst has conducted a preliminary requirements elicitation and
has identified three main components for the proposed system: *Members*, *Books* and *Loans*.

Identify and discuss the *essential* functional requirements for **each** component of the system.
Identify and describe **three** non-essential functions which you feel the stakeholders might
require.
Summarise the functional requirements identified as a set of abstract User Requirement.     **(10 marks)**

(c)  Using the user requirements listed in (b) above:                    **(15 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 4 [30 Marks]**

(a)  Explain, using examples, the difference between syntax, semantic and run-time errors. **(3 marks)**

(b)  Explain what is meant by boundary testing? **(2 marks)**

(c)  Describe the processes of *White box testing* and *Black box testing*. **(10 marks)**
What are the benefits and/or disadvantages of both approaches to testing?


(d)  Describe the following test strategies typically used in software testing: **(8 marks)**
   • Unit test
   • Acceptance test
   • Regression test
   • Volume/Stress test

(b)  Describe *Test Cases* and the role they play in the in the software testing process. **(7 marks)**