



DUBLIN INSTITUTE OF TECHNOLOGY

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**DT249 BSc. (Honours) Degree in Information  
Systems / Information Technology  
(Part-time)**

**Stage 4**

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**SAMPLE PAPER**

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**INFORMATION SYSTEMS ENGINEERING [CMPU4035]**

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DATE            TIME

2 HOURS

INSTRUCTIONS TO CANDIDATES

ANSWER **THREE** QUESTIONS OUT OF **FOUR**.

ALL QUESTIONS CARRY EQUAL MARKS.

1. (a) Describe the *Vee Software Development Model (V Model)*. How does it compare to the *Waterfall Lifecycle Model*?  
(12 marks)

(b) (i) Explain the general philosophy of the *X Driven-Development* approach to software development.  
(3 marks)

(ii) Describe in detail each of the following:

- a) Feature Driven-Development
- b) Test Driven-Development
- c) Behaviour Driven-Development

(18 marks)

2. (a) Develop a UML Activity Diagram for the following scenario:

*To enrol in college a student fills out enrolment forms.*

*If they are filled out incorrectly, then if there is help available, the student should obtain help, but if there is no help available, the student should retry to fill out the enrolment forms, unless it's a trivial problem or the form are filled out correctly, then the student can proceed to enrol in the university.*

*Once they've enrolled, two things can happen in parallel; (1) they can "Attend University Overview Presentation", and (2) they can "Enrol in Seminar(s), and "Make initial Tuition Payments".*

(18 marks)

(b) Develop a UML Use Case Diagram for the following scenario:

*You see a man with chainsaw walking down the road.*

*You think "I wonder is that a Halloween costume (if so, it's SCARY). Maybe there a defending against Zombies (if so, it's SCARY and VIOLENT), or maybe they are a Psycho Killer (if so, it's SCARY and VIOLENT again)"*

*Then you think "Wait, maybe it's their OCCUPATION, maybe they're a Lumberjack or a Juggler".*

(15 marks)

3. (a) Computer security is a multifaceted issue, four common protection methods are:
- i. Antivirus Software
  - ii. Firewalls
  - iii. Patch Management
  - iv. Authentication

Explain each of those methods in detail.

**(20 marks)**

- (b) Explain what a *Denial-of Service Attack* is, including an example.

**(13 marks)**

4. (a) What are the seven principles of *Universal Design*?

**(15 marks)**

- (b) The last two principles are focused on the Built Environment, suggest *two* replacement Principles and include Guidelines for both *End-Users* and *Developers* in both cases.

**(18 marks)**