

NATIONAL UNIVERSITY OF IRELAND

GALWAY

SUMMER

EXAMINATIONS

1999

**BE Degree Examination in  
Industrial Engineering and Information Systems**

**Systems Engineering**

Examiners: Dr. E.J. Wright  
Professor M. E. J. O'Kelly  
Dr. David O'Sullivan  
Mr. Lawrence Dooley  
Ms. Kathryn Cormican

Instructions: Time allowed: three hours  
Attempt five out of seven questions  
All questions carry equal marks

**Question 1.**

- (a) Effective project leadership is recognised as a key component in successful organisations. How would you describe the concept of leadership in terms of traits and style? In addition, critically assess the role of leaders in the modern manufacturing organisation. (12 marks)
- (b) Conflict management in projects is fundamental to the success of organisations, but how can organisations ensure that dysfunctional conflict is contained while still encouraging functional conflict, such as positive criticism? (8 marks)

**Question 2.**

- (a) A comprehensive methodology provides a clear understanding of what one is doing and why, and has a pre-established mechanism in place to facilitate change and innovation quickly and predictably. Describe in detail your own seven-step methodology for systems development, which draws from methodologies described in your course material. (10 marks)
- (b) It is widely accepted that employee resistance goes hand in hand with systems change. Identify and discuss five points that might soften the impact of a change initiative. (10 marks)

**Question 3.**

- (a) How does the IDEFo modelling technique distinguish between different types of inputs. Use this method to illustrate the principle functions of the new product development process. (10 marks)
- (b) List seven performance measures with which you are familiar for systems development and justify your selection based on good practice in this area. Select measures that span both social and technical issues in systems development. (10 marks)

**Question 4.**

- (a) "The ability of an organisation to generate ideas in relation to innovation and problem solving is essential for its continued competitiveness". Define and detail a "tool-kit" which will support idea generation within a team based environment. (10 Marks)
- (b) Explain the terms Radical and Incremental change. Discuss the view that both radical and incremental change cannot happen simultaneously. (10 Marks)

**Question 5.**

One of the key messages of Systems Engineering is that many organisational factors are interrelated in order to successfully manage the change process.

- (a) Detail what you believe are the main factors involved in the change process. (8 Marks)
- (b) Discuss the interrelationships between these factors (12 marks)

**Question 6.**

A number of enablers/ levers support the paradigm of Systems Innovation. Discuss these levers and explain how they support the systems innovation process. (20 Marks)

**Question 7.**

Knowing where the organisation wants to be as a result of the change process is essential to its success. As a result, a strong correlation must be achieved between the high level strategic vision and the operational measures which are pursued by the organisation. Discuss the above statement and explain how the correlation is attained. (20 Marks)