

NATIONAL UNIVERSITY OF IRELAND

GALWAY

SUMMER

EXAMINATIONS

2000

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

Systems Engineering

Examiners: Dr. E.J. Wright
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Instructions: Time allowed: three hours
Attempt five out of seven questions
All questions carry equal marks

1. The past century has presented numerous approaches to the control and management of organisational change. From the reservoir of knowledge encompassed in these approaches, present FIVE levers that you feel actively contributes to systems innovation. Explain your choice of levers using practical examples. **(20 marks)**

2.
 - (A) Research has shown that between 50 to 70% of change projects undertaken, fail to achieve their targets. Outline the main reasons for the failure of change projects and discuss how these problems can be overcome. **(15 marks)**

 - (B) Write a short note on the following tools in relation to problem solving and idea generation and how they support each other:
 - (i) Fishbone \ Cause & Effect technique
 - (ii) Brainstorming
 - (iii) Affinitising
 - (iv) Weighted Ranking**(5 marks)**

3.
 - (A) The systems innovation process can be represented by the Development Funnel model. Sketch this model and its main activities. Detail how the process operated and the integration between the elements. **(15 marks)**

 - (B) Detail FIVE design goals that a software programme should possess to support the systems innovation process. **(5 marks)**

4.
 - (A) It is essential that a strong correlation exists between an organisation's high level strategic vision and their operational measures in order to focus the company in the right direction. Discuss the above statement and explain how this integration is attained / achieved. **(10 marks)**

 - (B) List six performance measures with which you are familiar. Select measures that span both social and technical issues in product and process development. **(10 marks)**

5.
 - (A) Project planning is becoming increasingly important in project management due to the high failure rates of projects. What are the benefits and limitations of project planning? **(10 marks)**

- (B) Outline the key criteria, which a project selection model must possess. Discuss in brief two selections model. **(10 marks)**

6. (A) More and more manufacturing companies are moving away from functional oriented structures to team based systems. Compare and contrast both of these approaches, outlining the benefits and limitations of these two structures. **(10 marks)**

- (B) Motivation theory suggests that reward structures align the interests of the employee with that of the organisation. Discuss this statement and provide examples of how this alignment can be attained. **(10 marks)**

7. A sound Methodology can act as a guideline to enable systems change. Outline and describe in detail a seven-step methodology, which facilitates the change process drawing from your notes and course material. In addition, identify tools to support each step of the methodology and indicate how these tools support the specific stage of the methodology. **(20 marks)**