

# **NATIONAL UNIVERSITY OF SCIENCE AND TECHNOLOGY**

## **FACULTY OF INDUSTRIAL TECHNOLOGY**

### **DEPARTMENT OF INDUSTRIAL ENGINEERING**

#### **PART III - INDUSTRIAL ENGINEERING DESIGN I - TIE 3119**

#### **FIRST SEMESTER EXAMINATION - NOVEMBER/DECEMBER 1999**

**Time Allowed: 3 Hours**

**Answer FIVE questions**

**All Questions carry equal marks**

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- Qu. 1 What is technological research and development?  
Discuss the role it plays in the development of a product and say what bottom line implications it has in a manufacturing enterprise.
- Qu. 2 Explain what a product development process is and discuss the benefits of a well defined process in the development of products.
- Qu. 3 Outline the phases of a generic development process, specifying the tasks and responsibilities undertaken at each of the phases.
- Qu. 4 To successfully carry out the product development process, individual designers and developers can be grouped into either functional or project organisations. Discuss the two classifications and compare them to a matrix organisation.
- Qu.5 Describe, giving examples, the following categories of product type.
- i) platform products
  - ii) process intensive products
  - iii) technology push products
- Qu.6 What do you understand by problem decomposition with respect to the concept generation methodology? Discuss one scheme by which a problem can be decomposed.
- Qu.7 Explain what you understand by product architecture and say what implications the degree of modularity on product architecture has to an enterprise.

**END OF EXAM**