



**NATIONAL UNIVERSITY OF SCIENCE AND TECHNOLOGY**

**FACULTY OF ENGINEERING**

**DEPARTMENT OF INDUSTRIAL AND MANUFACTURING ENGINEERING**

**MANUFACTURING STRATEGY**

**EIE 5217**

**Second Semester Main Examination Paper**

**March 2025**

This examination paper consists of 5 printed pages

**Time Allowed: 3 hours**

**Total Marks: 100**

**Special Requirements: none**

**Examiner's Name: Mr. I. Mapindu**

**INSTRUCTIONS AND INFORMATION TO CANDIDATE**

1. Answer all question in Section A and any other 3 from Section B
2. Question One has 40 marks and the rest of the questions have 20 marks each.
3. Use of calculators is permissible

## SECTION A (COMPULSORY)

### QUESTION ONE:

- a) Define Business Process Re-Engineering (BPR) and discuss the fundamental principles that guide its implementation. [5]
- b) You are a business process consultant hired by Blessed Hand Manufacturing, a company that produces custom-made furniture. The company has been experiencing delays in fulfilling customer orders, leading to customer dissatisfaction and increased costs. The management has asked you to re-engineer the process to improve efficiency, reduce lead times, and lower operational costs.

The process includes:

- Order Receipt: where the customers place orders via email or phone, the sales team manually enters the order details into the system and the order is then forwarded to the design team for approval.
- Design Approval: where the design team reviews the order specifications and creates a custom design, the design is sent back to the sales team for customer approval and if the customer requests some changes, the process repeats.
- Material Procurement: Once the design is approved, the procurement team orders the required materials from suppliers. Materials are delivered to the warehouse and inspected for quality.
- Production: The production team schedules the order based on availability and the furniture is manufactured in batches, regardless of order priority. Quality checks are performed after production.
- Packaging and Shipping: The finished product is packaged and labeled. Then the shipping team arranges for delivery to the customer. Customers are notified of the delivery date.

The process times are shown in Table Q1 below

**Table Q1: Process Times**

Stage	Activity	Average Time (Hours)
1. Order Receipt	Manual order entry	2
2. Design Approval	Design creation and approval	8
3. Material Procurement	Ordering and receiving materials	48
4. Production	Manufacturing and quality checks	24
5. Packaging and Shipping	Packaging and delivery	6
Total Lead Time		88 ours (3.7 days)

- i. Identify the inefficiencies of this business process. [5]
- ii. Carry out a BPR and propose a more efficient process. [10]
- c) Define the Blue Ocean Strategy as it applies to manufacturing entities and explain its principles. [5]
- d) You are a strategic consultant hired by GreenTech Appliances, a mid-sized manufacturer of energy-efficient home appliances such as refrigerators, washing machines, and air conditioners. GreenTech has been operating in a highly competitive market, where competitors are primarily focused on offering low prices and basic features. The company is struggling to differentiate itself and grow its market share. GreenTech's management has asked you to develop a Blue Ocean Strategy to help the company break away from the competition, create new demand, and capture untapped market opportunities.

You are required to:

- Conduct a strategic analysis of the company and identify the Blue Ocean opportunities. [5]
- Using the Four Actions Framework, develop the Blue Ocean Strategy for the company. [10]

## **SECTION B (Answer any 3 questions from this section)**

### **QUESTION 2**

“HARARE – Zimbabwe’s manufacturing sector, despite its proximity to established value chains in agriculture, mining, and retail, has consistently underperformed in contributing to the national Gross Domestic Product (GDP). GDP, a monetary measure of the market value of all final goods and services produced within a country over a specific period, often serves as a key indicator of economic health.

While sectors like agriculture, mining, and retail have experienced growth, manufacturing has seen a downward trend. Its contribution to GDP has declined from over 15% in 2017 to just 11.2% in 2022. This underperformance is particularly disappointing given the sector’s potential to drive exports, productivity, job creation, and overall wealth generation. ”  
(Extracted from The Zimbabwe Mail of June 7 2024).

- a) Analyse this statement in relation to the manufacturing sector challenges. [10]
- b) How can the manufacturing sector of Zimbabwe leverage value chains to achieve sector growth. [10]

### **QUESTION 3**

A manufacturing company based in South Africa is considering entering the Zimbabwean market. Using the PESTEL framework, analyze the external factors that the company must evaluate as part of its manufacturing strategy. In your response, provide specific examples relevant to Zimbabwe’s economic, political, social, technological, environmental, and legal landscape, and explain how these factors might influence the company’s decision-making process. [20]

### **QUESTION 4**

- a) Define corporate strategy as it applies to Manufacturing entities. [4]
- b) Using an example of your own evaluation how vertical integration and strategic alliances can affect the growth of manufacturing entities. [10]
- c) Explain how global strategy and international expansion can be crucial to business growth. [6]

### **QUESTION 5**

The following was extracted from research by, Oluwatob, et al., (2020), “Engineering education is essential to innovation, industrialization, vital drivers of economic growth, and sustainable development in developed and developing countries worldwide. The dearth of adequate engineering skills in many sub-Saharan African countries is a persistent challenge that impedes the progress of industries and economies during rapid technological change. It has been worsened by the gap between the skills and education provided by institutions of learning and those needed by industry, partially linked to the lack of access to modern and sophisticated equipment and technology by engineering academics to deliver the necessary skills to future engineers efficiently.”

In light of the above extract, discuss how a strategic partnership between the Manufacturing Sector and Academia may foster the growth of the sector while empowering the learning institutions through research and development. [20]

### **QUESTION 6**

In a certain National Strategic Discussion Forum, one esteemed technocrat said, “National Companies such as NRZ and ZISCO Steel mainly require digitization for resuscitation.”

Discuss this statement. [20]

**End of examination question paper.**