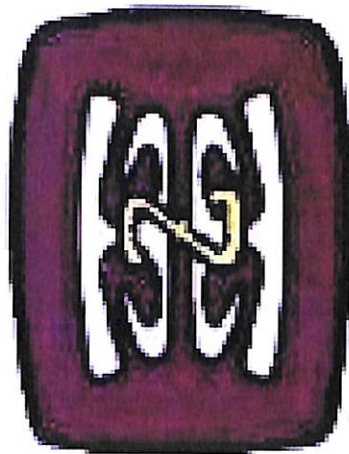


**PAPUA NEW GUINEA UNIVERSITY OF TECHNOLOGY  
DEPARTMENT OF MECHANICAL ENGINEERING**

**EXAMINATION QUESTION PAPERS**



**ME 411  
OPERATIONS MANAGEMENT**

**SEMESTER ONE - 2024**

**THE PAPUA NEW GUINEA UNIVERSITY OF TECHNOLOGY**

**MECHANICAL ENGINEERING – 4<sup>TH</sup> YEAR DEGREE**

**FIRST SEMESTER EXAMINATIONS - 2024**

**ME411 – OPERATIONS MANAGEMENT**

**DAY: MONDAY DATE: 28/ 05/ 2024 – Time: 08:20 AM**

**TIME ALLOWED: 2 HOURS**

**INFORMATION FOR CANDIDATES**

1. You have ten (10) minutes to read the examination question paper. **DO NOT** write anything in the answer booklet during this time.
2. Check the Examination paper, which should have the correct number of pages (4).
3. There are five questions on this paper. Answer **ANY FOUR** questions, in any order.
4. **NOTES** and **TEXTBOOKS** are not allowed. Any Cellphones not allowed in the examination room.
5. Write on one side of the page only and keep clear of the left side margins and also the right hand side margins of the workbook page.
6. Show all your work clearly in the booklet.
7. Write your name and Student Identification Number clearly on the front of the answer booklet. Return the completed booklet and any other graph paper.
8. Start each question on a new page, and clearly state at the top of each page.
9. Any candidate cheating the examination will be disqualified.
10. Write your name clearly on the front page of the booklet using **BLOCK LETTERS – DO IT NOW!**

**Marking Scheme**

Question#	Topic	Marks	Student's score
1	Production of goods and services	25	
2	Costings	25	
3	Operations decision	25	
4	Inventory Control	25	
5	Maintenance	25	
	Total	100	Total: ----/100

**Question 1 (25 marks)**

- a) From the table (TABLE1 Tersine, pg 5, Tersine 2<sup>nd</sup> Edition) showing the scope of production and operations management, discuss briefly the three classifications, and giving examples. (5 marks)
- b) and express precisely the characteristics of each classification and give typical examples. (5 Marks)
- c) Take a mining company as an example of the organization producing a good. Briefly discuss and give examples of the Inputs, transformation process and the output. (15 marks)

**Question 2 (25 marks)**

The Jasmine Furniture Company produces chairs. An analysis of their accounting data reveals:

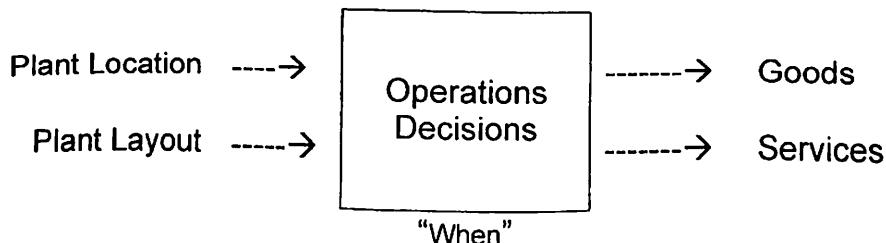
Item	Value/ Quantity	Unit
Fixed Cost	PGK50,000	Per Year
Variable Cost	PGK2	Per Chair
Capacity	20,000	Chairs per year
Selling Price	PGK7	Per Chair

- a. Compute the breakeven point in terms of number of chairs. (5 Marks)
- b. Find the number of chairs Jasmin must sell to show a profit of PGK30,000. (5 Marks)
- c. What is the fixed cost per chair at 75% capacity? (5 Marks)
- d. List the inputs to the fixed costs and how can you improve the manufacturing process? (10 Marks)

**Question 3 (25 Marks)**

The operations decisions will decide when, how many units of the product to provide, where the output is to satisfy the customer, be it goods or services.

The operations function. (Figure 1 , pg 414, Tersine, 2<sup>nd</sup> Edition)



- a. The forecasting function are depended on the forecasting models. Briefly outline the factors that influences the forecasting models, which affects the outputs. The use of a diagram is acceptable. (10 marks)
- b. Briefly discuss the factors that influences the Forecasting Models. (15 marks)

**Question 4 (25 Marks)**

Inventory Control is more about managing the inventory for the success of any operations.

- a. List and give examples of the types of inventories that an organization will have to manage. Let the discussion be on the student mess inventories. (5 marks)
- b. If an organization has numerous inventories, example around 5,000 items. Note that inventory is money spent but the items are not used. Discuss briefly how the management should give appropriate attention to the important inventory items. (*hint: ABC*). (15 marks)
- c. Given the list of inventory items, its cost per unit and the total value. Briefly explain how management can differentiate the items and manage it accordingly. (5 marks)

Item	Price per unit	Units in stock	Total value	
Diesel Fuel	PGK3.00/ litre	15 million litres	PGK45 million	
Haul Truck Tyres	PGK78,000/tyre	100 tyres	PGK7.8 million	
Biros	PGK2 each	100 units	PGK200	
Uniform shorts	PGK50 each	40 pairs	PGK2,000	
Uniform shirts	PGK40 each	50 each	PGK20,000	
Uniform Trousers	PGK80 each	20 pairs	PGK1,600	
Safety Boots	PGK120 pair	60 pairs	PGK7,200	
Safety Shoes	PGK50 pair	30 pairs	PGK1,500	
Toner for printers	PGK15 each	30 box	PGK450	
Fuses, Light vehicles	PGK1.50 each fuse	200 each	PGK300	
Antenna, light vehicle	PGK350 each	25 units		

**Question 5 (25 Marks)**

Briefly discuss the types of maintenance introduced, what analysis would one use as a guide to decide which type of maintenance should be introduced. (10 marks)

Below is a problem to be solved. That is, how many additional forklift equipment should the owner purchase? (15 Marks)

The maintenance department of York Manufacturing Company is responsible for servicing 50 electric forklifts. It costs \$30 per day to own a forklift whether it is used or not. It costs the company on the average 80% more a day for every forklift that breaks down. It takes on the average 1.5 days to return a forklift to operation after a breakdown. Maintenance records for the past 5 years indicate the following:

<i>Number of forklifts broken down</i>	<i>Frequency (days)</i>
0	150
1	300
2	450
3	300
4	180
5	105
6	15
	<u>1500</u>

How many backup forklifts should be purchased to supplement the existing fleet?

THE END OF THE PAPER