

THE PAPUA NEW GUINEA UNIVERSITY OF TECHNOLOGY

MECHANICAL ENGINEERING – 4TH YEAR DEGREE

FIRST SEMESTER EXAMINATIONS – 2023

ME 411 – OPERATIONAL MANAGEMENT

WEDNESDAY, 7TH JUNE 2023 – 08:20 AM

TIME ALLOWED: 2 HOURS

INFORMATION FOR CANDIDATES

1. You have 10 minutes to read the paper. **DO NOT** write anything in the booklet during this time.
2. Check your question paper which has seven (7) pages.
3. There are **FIVE QUESTIONS** in this paper. Answer **ONLY FOUR** of the Questions in any order.
4. Notes and Textbooks are not allowed. Cell phone/s are not permitted in the examination room.
5. Show all your work clearly in the booklet.
6. Write on one side of the page only and keep clear of the left hand side margins and also the right hand side margins of the workbook page.
7. Write your name and student ID Number clearly on the front of the answer booklet and also the attendance slip. Return the completed booklet and any other graph paper.
8. Start each question/ section on a new page, and clearly state the question or part thereof, at the top of the page.
9. Write your name clearly on the front page of the answer booklet using **BLOCK LETTERS – DO IT NOW!**

MARKING SCHEME

Marking scheme for each of the questions is as shown.

Question No.	Possible Mark	Percentage	Student's score
Question 1	20	25%	
Question 2	20	25%	
Question 3	20	25%	
Question 4	20	25%	
Question 5	20	25%	
TOTAL	80	100%	

QUESTION#1. Multiple Choice (20 Marks).

Answer all 20 Multiple Choice Questions, each question is valued at one mark (total 20 marks):

- 1) Which of the following is not an inventory?
 - A) Machines
 - B) Raw material
 - C) Finished products
 - D) Consumable tools

- 2) The following classes of costs are usually involved in inventory decisions except
 - A) Cost of ordering
 - B) Carrying cost
 - C) Cost of shortages
 - D) machining cost

- 3) The cost of insurance and taxes are included in
 - A) Cost of ordering
 - B) Set up cost
 - C) Inventory carrying cost
 - D) Cost of shortages

- 4) 'Buffer stock' is the level of stock
 - A) Half of the actual stock
 - B) At which the ordering process should start
 - C) Minimum stock level below which actual stock should not fall
 - D) Maximum stock in inventory

- 5) The minimum stock level is calculated as
 - A) Reorder level – (Normal consumption x Normal delivery time)
 - B) Reorder level + (Normal consumption x Normal delivery time)
 - C) (Reorder level + Normal consumption) x Normal delivery time
 - D) (Reorder level + Normal consumption) / Normal delivery time

- 6) Efficient supply chains
- A) Respond quickly to demand.
 - B) Have higher margins because price is not a prime customer driver.
 - C) Maintain buffer inventory to deal with demand/supply uncertainty.
 - D) Maximize performance at a minimum cost.
- 7) Which of the following is **NOT** a challenge that makes it increasingly difficult for supply chains to achieve strategic fit?
- A) Globalization
 - B) Changing Technology
 - C) Shorter Life Cycles
 - D) Decreased Product Variety
- 8) Which of the following is true for Inventory control?
- A) Economic order quantity has minimum total cost per order
 - B) Inventory carrying costs increases with quantity per order
 - C) Ordering cost decreases with lot size
 - D) All of the above
- 9) The ANGAU Memorial General Hospital project can be classified as a:
- A) Maroon Field
 - B) Green Field
 - C) Brown Field
 - D) Morobean Field
 - E) None of the above
- 10) Lae Biscuit Company is a manufacturing different type of food including:
- A) Noodles & Flavoured biscuits;
 - B) Pie and Coca cola
 - C) Coke & Chips
 - D) All of the above
- 11) Student Mess which provides for the demand for PNG Unitech students to be fed:
- A) Use electricity supplied by PNG Power;
 - B) Have Standby Power;
 - C) Uses other heating apparatus that uses LP gas;
 - D) All of the above.

- 12) Operations manager has to provide leadership needed to product the goods and services demanded by customers. These are the approaches required:
- A) Quality, Productivity, and Timeliness;
 - B) Behavioral and modelling approaches.
 - C) The life cycle of the product:
 - D) All of the above.
- 13) The differences of the goods and services are characterised by:
- A) Tangible/Intangible outputs;
 - B) Low/High Customer contact;
 - C) Low/High uniformity of input;
 - D) All of the above.
- 14) The difference of the goods and services are characterised by:
- A) Low/High Labor content;
 - B) Easy/Difficult to measure productivity;
 - C) Lower/ Greater Input Variability
 - D) All of the above;
 - E) None of the above.
- 15) The Production system in operations management is managing the transformation process of the input into outputs. Managerial monitoring is achieved by:
- A) Plan of the Inputs;
 - B) Control of the Transformation process;
 - C) Making decisions on the Output;
 - D) All of the above.
- 16) External Factors do effect the following in operations management:
- A) The Inputs;
 - B) Transformation process or processes;
 - C) The Output (goods or services)
 - D) All of the above
 - E) None of the above
- 17) External Factors in operations management will include:
- A) The Weather;
 - B) Lack of national work force;
 - C) Purchase of items non-available in the country;
 - D) Change of the Governor general;
 - E) None of the above

- 18) External factors in operations management will not affect the following organizations:
- A) Fully 100% national owned company;
 - B) The company that has all national employees;
 - C) If the product is only sold in the country;
 - D) None of the above.
- 19) In a break-even analysis, the point of decision making happens when:
- A) The level of profit that the organization will make.
 - B) How many units of products you must produce or avail, so you can make a profit.
 - C) When supply chain management can meet the demand.
 - D) All of the above.
- 20) Critical Path Method can be used as a tool to:
- A) Identify the activities that needs to be done within the time scheduled, prior to starting on the next activity.
 - B) Assist the manager to plan and control the production or manufacturing process.
 - C) Assist the management on the level of availability of service required to meet the demand.
 - D) All of the above.
 - E) None of the above.

QUESTION#2 (20 Marks)

Break-even analysis is used often to help operations management decide on what action to take where there may be more than one option, depending on the probability of the decision.

Cost-Volume-Profit Graph CVP graphs can be used to gain insight into the behavior of expenses and profits. The basic CVP graph is drawn with Revenues in PGK term on the vertical axis and unit sales on the horizontal axis.

A new product has the following sales and cost data.

Selling price = PGK6 per unit.

Variable Costs = PGK4 per unit

Fixed Costs = PGK1,000 per month

Forecast Sale = 1,000 units per month

2a) Prepare a Breakeven Chart and scaling the graph to clearly indicate the total costs versus the revenue. (5 marks)

2b) Clearly indicate the breakeven point, giving the quantity of units at the break even point. (5 marks)

2c) Clearly indicate the value in PGK when the company has achieved the breakeven point. (5 marks)

2d) If the selling price was to increase, would the breakeven point quantity be higher or less. Show on the CVP graph. (5 marks)

QUESTION#3 (20 marks)

The Lae Biscuit Company management made a public announcement that a decision was made to close the production plant down for two weeks. Lae Biscuit Company is the manufacturer of *snax*TM biscuits and later the *snax*TM noodles.

In operations management, you need inputs, which are then transformed into outputs as goods (products or services).

Briefly explain some of the reasons for the decision by the Lae Biscuit Company management to shutdown for two weeks or fourteen days. (5 marks)

From the understanding of operations management, briefly discuss why the management select a period of two weeks laydown/ layoff? (5 marks)

Discuss briefly some of the external factors in operations management and briefly explain how these if any, could have influenced the decision. (10 marks)

QUESTION#4 (20 marks)

The industry visit to the Angau Memorial Hospital facility was a success. From the outline of the subject "Operations Management", briefly discuss how the trip was successful. (20 marks)

QUESTION#5 (20 marks)

5a) In Operations Management, "P-L-C" has another meaning. Briefly discuss what PLC stands for and explain the role of the operations manager with respect to the PLC of individual products. (10 marks)

5b) Briefly explain what would be the expected role (types of activities) of the Operations management team at every stage of a typical PLC? (10 marks)

THE END OF THE PAPER