



**THE UNIVERSITY OF THE WEST INDIES
FIVE ISLANDS CAMPUS**

Semester II

Examinations of APRIL/MAY 2023

Course Code: MGMT2026

Course Title: Production and Operations Management

Date of Assessment: May 9, 2023

Time: 1:00 pm

Duration: Two (2) Hours

INSTRUCTIONS TO CANDIDATES:

This paper has 7 pages and 7 questions.

YOU ARE REQUIRED TO ANSWER 4 QUESTIONS.

THIS ASSESSMENT IS WORTH 60 % OF YOUR FINAL GRADE.

ASSESSMENT DETAILS FROM INSTRUCTOR(S):

This examination paper comprises 4 (FOUR) sections. Section A consists of 1 (ONE) question and it MUST be answered by all candidates. Sections B, C and D consists of two questions each, and candidates must answer 1 (ONE) question from each of these sections. All questions are worth 15 MARKS each.

SECTION A (15 MARKS)

This section is COMPULSORY. Candidates are required to complete this question.

QUESTION 1

- a) Explain any **4 (FOUR)** differences between manufacturing and services. **(8 Marks)**
- b) Define the term 'competitiveness'. Discuss the **3 (THREE)** business strategies used by companies to enhance their competitiveness. **(7 Marks)**

SECTION B

Candidates are asked to choose ANY 1 (ONE) of the questions from this section.

QUESTION 2

- (a) Optimal Traders Limited produces generators and generator parts for the local, regional and international market. The value of the generators they produce is equal to \$670,000. They also produce various generator parts valued at \$210, 000. They pay staff members to the tune of \$325,000 per month; material cost for producing the generator and generator parts is valued at \$215,000 and they have to cover other incidental expenses amounting to \$180,000. What is the total productivity measure for Optimal Traders? **(3 Marks)**
- (b) Optimal Traders hired 3 additional workers to complete a large seasonal order from one of their international clients. Together the staff soldered 75 generators in a 6-hour day for two days. What is the labour productivity for the workers? **(3 Marks)**
- (c) Optimal Traders Limited is able to produce 1300 generators per week. Labour costs for the period averages \$250,000, material costs are approximately \$170,000 and overheads normally averages .5 of the labour costs. The generators from Optimal Traders are usually retailed for \$1050 per generator. Find the multifactor productivity measure? **(4 Marks)**
- (d) The Operations Manager wants to compare her company's performance against one of its main competitors, Codrington & Sons Limited. She wants to compare the multifactor productivity of manufacturing the generator motors. Assume that both companies have a 35 hr. work week and an hourly wage of \$15 per hour. Overhead is two times weekly labour cost. Material cost is \$12 per pound. Specific details are presented below:

Optimal Traders Production System

Output per unit – 750 generators

9 workers

360 pounds of raw material

Codrington & Sons Limited Production System

Output per Unit – 900 generators

12 workers

440 pounds of raw material.

- (e) What does the computed productivity figures suggest about the two companies (and their production systems)? **(5 Marks)**

QUESTION 3

- a) What is the difference between ‘standardisation’ and ‘mass customisation’? Briefly discuss **2 (TWO)** advantages and **2 (TWO)** disadvantages of BOTH for companies? **(6 Marks)**
- b) Explain the term reliability. Discuss **3 (THREE)** ways in which a company can improve its reliability. **(5 Marks)**
- c) Identify and explain any **3 (THREE)** characteristics of a well-designed service system. **(4 Marks)**

SECTION C

Candidates are asked to choose ANY 1 (ONE) of the questions from this section.

QUESTION 4

The Operations Manager at Antigua and Barbuda Beverages Limited is contemplating the addition of a new cranberry juice line to its current offerings, which will require a new robotic arm and filtration system for a monthly payment of \$330,000. The cost per can of cranberry juice would be \$27 and a can of juice would retail for \$42.

- a) How much cans of cranberry juice must be sold in order to break even? **(3 Marks)**
- b) What would the profit or loss be if 17000 cans of cranberry juice are made and sold in a month? **(4 Marks)**
- c) How many cans of cranberry juice must be produced in order to realize a profit of \$105,000? **(4 Marks)**
- d) The Operations Manager recently received an offer from a company based in Panama to outsource the manufacturing of the canned cranberry juice. The manager penciled out the offer below:

	Make	Buy
Annual Fixed Cost	300000	None
Variable Cost per unit	75	75
Annual Volume	105,000	107,000

- e) Use the information provided to help her make decision as to whether to buy or make the product. **(4 Marks)**

QUESTION 5

- a) Discuss any 3 (THREE) factors that a business should consider when deciding on a location (whether manufacturing or service companies). Use examples to support your answer.

(6 Marks)

- b) You are an Operations Analyst at the Temperate Batteries Limited. You are considering the establishment of a new manufacturing plant in three potential locations: Fitches Creek, Liberta and Urlings. Fixed costs per year are \$205,000, \$186,000 and \$169,600 respectively. Variable costs per batch of batteries are \$1176, \$920 and \$1030 respectively. The price per batch of batteries is \$1650. What is the best location (in terms of profit) for an expected volume of 1250 batches per year?

(5 Marks)

- c) Based on discussions with the Operations and Finance Manager, you are asked to calculate, based on the importance of the following factors, which location to choose. All three of you are visited the locations and scored them on the following. These are the average scores from each rater.

Factors	Weight	Fitches Creek	Liberta	Urlings
Road Network	0.20	75 15	96 19.2	85 17
Water Availability	0.12	82 9.84	94 11.28	90 10.8
Flooding Risk	0.13	70 9.1	55 7.15	91 11.83
Operating Costs	0.10	90 9	81 8.1	50 5
Access to Suppliers	0.27	92 24.84	65 17.55	85 22.95
Stable Internet Access	0.09	60 5.4	71 6.39	91 8.19
Electrical Infrastructure	0.09	70 6.3	74 6.66	67 6.03
Total	1.00	79.48	76.33	91.8

Using the following factor rating, determine which location alternative has the highest composite score?

(4 Marks)

SECTION D

Candidates are asked to choose ANY 1 (ONE) of the questions from this section.

QUESTION 6

- a) Assess any **3 (THREE)** benefits of good quality. **(6 Marks)**
- b) What are **3 (THREE)** consequences of poor quality for a company? **(5 Marks)**
- c) What is Total Quality Management (TQM)? Outline any **3 (THREE)** tenets of the TQM Approach. **(4 Marks)**

QUESTION 7

- a) Critically evaluate any **5 (FIVE)** functions of Inventory to a company. **(10 Marks)**
- b) Compare the advantages and disadvantages of the periodic and the perpetual inventory systems. **(5 Marks)**

END OF QUESTION PAPER