



FACULTY OF SCIENCE

**DEPARTMENT OF BIOTECHNOLOGY AND FOOD TECHNOLOGY
DEPARTMENT OF QUALITY & OPERATIONS MANAGEMENT**

NATIONAL DIPLOMA IN FOOD TECHNOLOGY

MODULE FTN3BFP
FOOD PRODUCTION III
CAMPUS DFC

SUPPLEMENTAL EXAMINATION - 2019

DATE: 10/ 01/ 2019

TIME: 08:00 AM

ASSESSORS

**DR B.C. DLAMINI
DR A. PRADHAN**

INTERNAL MODERATOR

**DR A.O. ADEBO
DR P. KHOLOPANE**

EXTERNAL MODERATOR

PROF D. KRUGER

DURATION: 3 HOURS

TOTAL MARKS: 120

NUMBER OF PAGES: 6

INSTRUCTIONS:

THIS QUESTION PAPER CONSISTS OF **TWO** SECTIONS:

SECTION A: OPERATIONS MANAGEMENT (72 Marks: 60%)

SECTION B: FOOD LEGISLATION (48 Marks: 40%)

1. Answer ALL questions.
2. Ensure your student number appears on all material you submit.
3. Questions may be answered in any sequence but **sub-sections must be answered together.**
4. Calculators are permitted (Only one per student)

REQUIREMENTS: 2 ANSWER SCRIPTS PER STUDENT (1 PER SECTION)

SECTION A: OPERATION MANAGEMENT (ASSESSOR: DR A. PRADHAN)

QUESTION 1

- 1.1 Define operations management (OM). Why is it important to study OM? (6)**
- 1.2 A food company has hired you as an operations manager to design its plant capacity. What are the considerations that you will make for a good capacity decision? (4)**
- 1.3 Forecasting is the art and science of predicting future events. Discuss the strategic importance of accurate forecasting. (6)**
- 1.4 A leading flavors and fragrances company decides to upgrade its equipment to produce the higher quality product. Two vendors have presented proposals as shown in the table below:**

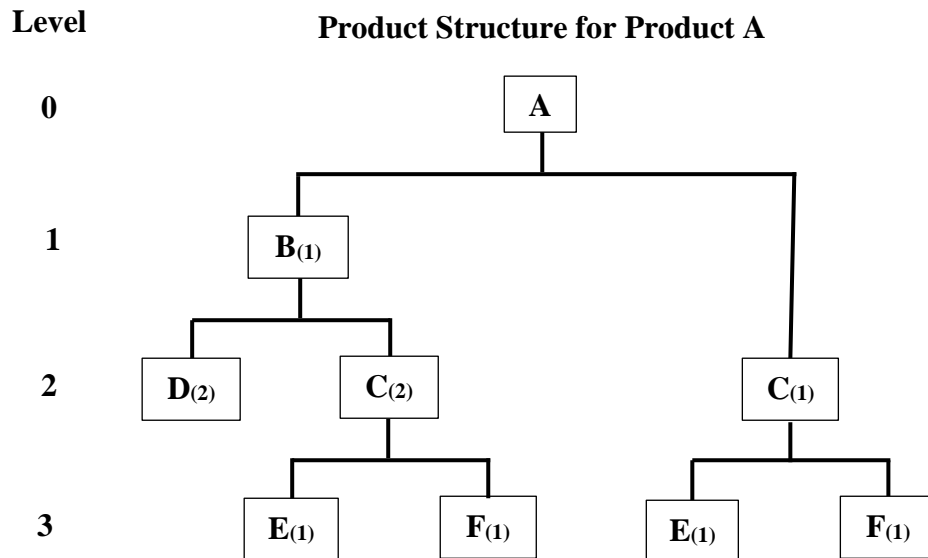
Proposals	Fixed cost (Rand)	Variable cost (Rand/ unit)	Selling price (Rand/ unit)
A	60,000	12	20
B	80,000	10	20

Determine the break-even points (BEP) in both units and Rand for each proposal. (8)

[24 MARKS]

QUESTION 2

- 2.1 Discuss three spheres of quality. (6)**
- 2.2 State the objective of human resource strategy. What are the benefits of teams and expanded job design? (8)**
- 2.3 The product structure and quantities of each component needed for assembly of an item A is provided in the figure below.**



- i. Identify parents and children. (2)
- ii. Determine the quantity of each component required to produce 10 units of the item A. (3)

2.4 Sales of bread loaves for last five weeks and predicted sales for the first week are provided in the table below. Develop forecasts for weeks 2 through 6 using exponential smoothing with a weight of $\alpha = 0.3$. (5)

Week	Sales	Forecast
1	450	410
2	495	
3	518	
4	563	
5	584	
6	?	

[24 MARKS]

QUESTION 3

- 3.1 Selection of process strategy requires decisions about equipment and technology. What are the important factors that you as an operations managers need to consider during selection of equipment? (6)**
- 3.2 List five capacity options of aggregate planning. (5)**
- 3.3 Outline the limitations of Material Requirements Planning (MRP). (4)**

3.4 A supermarket orders 5,000 confectionary items a week and the number of hours required by factory is 40 per week. The activities in the assembly line are provided in the table below.

Task	Task Must Follow This Task	Time (min)
A	-	0.12
B	A	0.30
C	B	0.36
D	C	0.25
E	D	0.17
F	D	0.05
G	E, F	0.10
H	F	0.08
I	G, H	0.25

- i. Draw the precedence graph. (3)**
- ii. Determine the cycle time and the theoretical minimum number of workstations. (2)**
- iii. Arrange the workstations to balance the line. (2)**
- iv. Determine the efficiency of the line balance. (2)**

[24 MARKS]

SECTION B: LEGISLATION (ASSESSOR: DR B.C. DLAMINI)

INSTRUCTIONS: Answer all questions

QUESTION 1

- a) Company X has recently changed management. The new management is interested in knowing more about Act 54 of 1972. Give a comprehensive summary of the Foodstuff and Disinfectant Act, Act 54 of 1972, including its purpose and importance in Food Control. (10)
- b) Give an overview of the Codex Alimentarius Commission including its role and mandate in food regulation. (13)

[23 MARKS]

QUESTION 2

- a) Briefly discuss your understanding of “Halal Foods” and the requirements on the use of the term “Halal” on food labels. (6)
- b) Briefly discuss the Regulations Relating to the Reduction of Sodium in Certain Foodstuffs and Related Matters (R. 214 of 2013). (6)
- c) Write a short summary on the Agricultural Product Standard Act, Act 119 of 1990. (10)
- d) Give your understanding of the GFSI. (3)

[25 MARKS]

TOTAL MARKS: 120

Formulae Sheet

Exponential smoothing = $F_t = F_{t-1} + \alpha (A_{t-1} - F_{t-1})$

where F_t = new forecast

F_{t-1} = previous period's forecast

α = smoothing or weighting constant
($0 \leq \alpha \leq 1$)

A_{t-1} = previous period's actual demand

Break-even point (BEP_x) = $\frac{F}{P - V}$ (units)

P = selling price per unit
(after all discounts)

Break-even point (BEP_R) = (BEP_x) X P = $\frac{F}{1 - V/P}$ (money)

F = fixed costs

V = variable cost per unit

Cycle time = $\frac{\text{Production time available per day}}{\text{Units required per day}}$

Theoretical minimum number of workstations = $\frac{\sum_{i=1}^n \text{Time for task } i}{\text{Cycle time}}$

Efficiency = $\frac{\sum \text{Task times}}{(\text{Actual number of workstations}) \times (\text{Largest cycle time})}$