BINDURA UNIVERSITY OF SCIENCE EDUCATION

EXECUTIVE MASTERS IN BUSINESS LEADERSHIP   EMB504

OPERATIONS MANAGEMENT

JUN 2023

Time : 3 hours

Candidates should answer any FOUR questions. Each question should start on a fresh page. Marks will be allocated as indicated.

A1. (a) State the two objectives of operations management. [4]

(b) Describe the duties of an Operations Manager. [12]

(c) Briefly discuss the three different types of processes. [9]

A2. You are given the following data to maximize profit from allocating three resources to two nonnegative resources as follows:

| Resource | Resource Usage per Activity | | Amount of Resource Available |
	Activity 1	Activity 2	
1	2	1	10
2	3	3	20
3	2	4	20
Profit per unit	$20	$30	

(a) Formulate the linear programming problem. [4]

(b) Use the graphical method to determine the optimal resource allocation. [6]

(c) Use the simplex method to determine the optimal daily resource allocation for each activity. [9]

(d) State the best decision for the manager. [6]

A3. (a) Explain the meaning of project management and when it is used. [3,4]

(b) What is the meaning of the abbreviation CPM-PERT in project management. [3]

(c) Define a critical path. [3]

(d) Given the following activities relating to a project.

Activity	Preceeding Activities	Duration(days)
A	None	5
B	None	1
C	B	2
D	A,C	4
E	A	6
F	D,E	3

(i) Construct the project network for this project. [7]

(ii) Find the earliest start times and latest time for event and identify the critical path. [5]

A4. (a) Describe when transportation problems are relevant in operations management. [6]

(b) Perform two iteration of Vogel's approximation method to solve the following transportation problem.

Supplier	Destination					Supply
	1	2	3	4	5	
1	2	4	6	5	7	5
2	7	6	3	M	4	6
3	8	7	5	2	5	6
4	0	0	0	0	0	4
Demand	4	4	2	5	5	

[12]

(c) Give an example of an assignment problem. [7]

A5. (a) Briefly explain the uses of inventory control. [2]

(b) A company stocks an item that is consumed at the rate of 50 units a day. It costs the company $20 each time an order is placed. A unit inventory held in stock for a week costs $0.70. Assuming that there are no shortages, determine the optimum number of orders the company has to place every year. [6]

(c) Define the following terms

(i) Maximax criterion, [2]

(ii) Expected value criterion. [2]

(d) A company is considering developing and marketing a new product. It is estimated to be twice as likely that the product would prove to be successful as unsuccessful. If it were successful, the expected profit would be $1 500 000. If it is unsuccessful the expected loss is $1 800 000. A marketing survey that costs $300 000 can be conducted to predict whether product would be successful. Past experience with such surveys shows that successful products have been predicted to be successful 80% of the time whereas unsuccessful product have been predicted to be unsuccessful 70% of the time

(i) Using revenue minus costs as payoff construct the decision tree. [11]

(ii) Which action maximizes the expected payoff? [2]

A6. (a) Operations managers have to ensure a smooth flow of the process. Explain how you document a process flow. [12]

(b) Briefly discuss performance metrics. [13]

END OF EXAMINATION PAPER.