



PAN AFRICA CHRISTIAN UNIVERSITY

**END OF SEMESTER EXAMINATION FOR THE DEGREE OF
JANUARY –APRIL 2025**

CAMPUS: ROYSAMBU

DEPARTMENT: BUSINESS

COURSE CODE: BCM 303

COURSE TITLE: MANAGEMENT DECISION MODELS

EXAM DATE:

TIME:

INSTRUCTIONS

- This examination script consists of **SIX (6)** questions.
- Answer question **ONE** and ANY other **THREE** Questions.
- Read all questions carefully before attempting.
- Write your **student number** on the answer booklet provided.

- a. Explain the term operations research using relevant example (2 marks)
- b. Discuss two areas where operations research is applied. (2 marks)
- c. Describe three characteristics of operations research. (6 marks)

Question Two (10 marks)

In a computer center after studying carefully the three expert programmes, the head of computer center, estimates the computer time in minutes required by the experts for the application programmes as follows:

		<i>Programmes</i>		
		<i>A</i>	<i>B</i>	<i>C</i>
Programmes	1.	120	100	80
	2.	80	90	110
	3.	110	140	120

Using the Hungarian method, assign the programmers to the programmes in such a way that the total computer time is minimum.

Question Three (10 marks)

- a. Explain the term network analysis using relevant examples. (2 marks)
- b. Describe the following terms as used in network analysis
 - i. Activity (2marks)
 - ii. Critical path (2 marks)
 - iii. Dummy activity (2 marks)
 - iv. Networks (2 marks)

Question Four (10 marks)

- i. Explain the trans-shipment problem as used in management decision models using relevant examples. (4 marks)
- ii. State the main characteristics of the transshipment problem. Use relevant examples. (6 marks)

QUESTION FIVE
marks)

(10

- a. Using relevant examples, discuss **three** importance of game theory (6marks)
- b. Explain any **four** application areas of simulation giving relevant examples.(4 marks)

QUESTION SIX
marks)

(10

A mobile phone manufacturing company has three branches located in three different regions, say Jaipur, Udaipur and Mumbai. The company has to transport mobile phones to three destinations, say Kanpur, Pune and Delhi. The availability from Jaipur, Udaipur and Mumbai is 40, 60 and 70 units respectively. The demand at Kanpur, Pune and Delhi are 70, 40 and 60 respectively. The transportation cost is shown in the matrix below (in SHS.).

		Destinations			Supply
		Kanpur	Pune	Delhi	
sources	Jaipur	4	5	1	40
	Udaipur	3	4	3	60
	Mumbai	6	2	8	70
Demand		70	40	60	170

Use the Vogel's Approximation Method to find a Basic Feasible Solution