



KAIMOSI FRIENDS UNIVERSITY

SECOND YEAR SECOND SEMESTER UNIVERSITY EXAMINATIONS

2025/2026 ACADEMIC YEAR

SPECIAL EXAMINATIONS

FOR THE DEGREE OF BACHELOR OF COMMERCE

COURSE TITLE: MANAGEMENT DECISION MODELS

COURSE CODE: BCB 206

DAY/DATE: 23/06/26

TIME: 03:00 PM – 05:00 PM

INSTRUCTIONS TO STUDENTS

1. **ANSWER QUESTION ONE AND ANY OTHER TWO FROM THE CHOICES GIVEN.**
2. **PHONES, SMART WATCHES, EAR PHONES OR ANY OTHER UNAUTHORIZED DIGITAL AND AI GADGETS AND APPLICATIONS ARE NOT ALLOWED IN THE EXAMINATION ROOM.**
3. **ANSWER ALL QUESTIONS IN THE EXAM ANSWER BOOKLET PROVIDED.**
4. **DO NOT WRITE ON THIS QUESTION PAPER.**
5. **ALL KAFU EXAMINATION RULES AND REGULATIONS APPLY.**
6. **DURATION OF EXAMINATION: TWO (2) HOURS**

KAFU observes ZERO tolerance to examination cheating.

*This paper consists of **THREE** printed pages. Please turn over.*

QUESTION ONE (COMPULSORY)[30 MARKS]:

a) Explain the following terms:

i) Feasible solution space **(3marks)**

ii) Optimum solution **(3marks)**

iii) Critical path and critical; activities **(3marks)**

b) A firm produces two products X and Y with a contribution of \$8 and \$10 per unit respectively. Production data : (per unit)

	Labour hours	Material A	Material B
X	3	4	6
Y	5	2	8
Total available	500	350	800

i) Formulate a linear programming model in the standardized manner

(5marks)

ii) Solve the model using the graphic method

(6marks)

c) A foreman has four fitters and has been asked to deal with five jobs. The times for jobs are estimated as follows:

		Fitters			
		Mark	Jake	Don	Ken
Job	1	6	12	20	12
	2	22	18	15	20
	3	12	16	18	15
	4	16	8	12	20
	5	18	14	10	17

i) Explain why the problem is not balanced and balance it **(4marks)**

ii) Assign the jobs to men so as to minimize the total time taken and identify the job which will not be dealt with **(6marks)**

QUESTION TWO [20 MARKS]:

a) What is an assignment problem? Give two areas of its application

(5marks)

b) Solve the following problem using graphical method

Maximize

$$Z = 9X_1 + 10X_2$$

Subject to

$$X_1 + 2X_2 < 8$$

$$5X_1 + 2X_2 < 16$$

$$X_1, X_2 > 0$$

(15marks)

QUESTION THREE [20MARKS]:

Highlight four merits and four demerits of linear programming

(8marks)

Find the non-degenerate basic feasible solution for the following transportation problem using the

North West Corner rule

(12marks)

	Destination				supply
	1	2	3	4	
1	10	20	5	7	10
2	13	9	12	8	20
3	4	5	7	9	30
4	14	7	1	0	40
5	3	12	5	19	50
Demand	60	60	20	10	

QUESTION FOUR [20 MARKS]:

- a) Define linear programming and give its main applications
(6marks)
- b) Explain what is an unbalanced transportation problem how will you balance it?
(4marks)
- c) Management decision modelling has been characterized as a tool designed to increase the effectiveness of managerial decision. Discuss (10marks)

QUESTION FIVE [20MARKS]:

- a) Suppose you want to invest sh. 10,000 in the market by buying shares in one of two companies: T and S. shares in company T although risky could yield a 50% return on investment during the next year. If the stock market conditions are not favorable (condition in a bear market), the stock may lose 20% of its value. Company S provides safe investment with 15% return with a bull market and only 5% in a bear market. Predictions indicate a 60% chance for bull market and 40% for bear market.

Required:

- Where would you invest your money? (10marks)
- b) Explain five reasons against holding inventory (5marks)
- c) Explain the following concepts in the contest of game theory: (5marks)
 - i) Pure strategies
 - ii) Saddle point