



**National Open University of Nigeria**  
**Faculty of COMPUTING**  
**Department of Computer Science**  
**2025\_2 EXAMINATIONS**

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**CIT425 - Operations Research**

**COURSE UNIT: 3**

**Instruction: Answer Question 1 and any other three questions**    **Time Allowed: 2 ¾ hours**

**Question 1:**

- a. List and briefly explain the main characteristics of Operations Research. **8 marks**
- b. (i) Define an optimization problem **3marks**  
(ii) State three areas of application of linear programming. **3 marks**
- c. Describe dynamic programming and its key features **6 marks**
- d. Define the transportation problem and explain its main objective. **5 marks**

**Question 2:**

Create a flow chart detailing the stages involved in the application of Operations Research to solve a management problem. Explain the various stages. **15 marks.**

**Question 3:**

Using graphical method of linear programming, maximize:  $R = 4x + 5y$  subject to the following constraints:

$$2x + 5y \leq 25,$$

$$6x + 5y \leq 45,$$

$$x \geq 0, y \geq 0$$

**15 marks**

**Question 4:**

Critique the effectiveness of the dynamic programming approach in solving real-world planning problems. Provide examples to support your arguments. **15 marks**

**Question 5:**

Discuss the three methods of solving transportation problems.

**15 marks**

**Question 6:**

Evaluate the statement: *"The assignment problem can always be solved most efficiently by its own unique method rather than the transportation methods."* consider the efficiency, complexity, and applicability of different methods for solving the assignment problem in your discussion. **15 marks**