# ELIZADE UNIVERSITY,

# ILARA-MOKIN,

# ONDO STATE

## FACULTY: Social and Management Sciences
## DEPARTMENT: BUSINESS ADMINISTRATION
## FIRST SEMESTER EXAMINATIONS
## 2014/2015 ACADEMIC SESSION

COURSE CODE: BUS 309, BFN 309, ACC 307

COURSE TITLE: DECISION ANALYSIS

DURATION: 2 hours 30 minutes

HOD's SIGNATURE

General Instructions:

1. Answer any four (4) questions
2. Write your matriculation number in the space provided
3. Credit will be given for good English, legibility and orderly presentation
4. All four questions carry 15 marks each
5. No borrowing of calculators, rulers, pencil, erazer, graph paper or just anything.

MATRICULATION NO: _____

## QUESTION 1

The following table details the major activities in a project.

| ACTIVITIES | PRECEDENT ACTIVITIES | DURATION (DAYS) |
|---|---|---|
| A | - | 15 |
| B | - | 20 |
| C | A | 25 |
| D | A | 10 |
| E | B | 15 |
| F | B | 20 |
| G | D, E | 20 |
| H | D, E | 30 |
| I | D, E | 15 |
| J | C, G | 10 |
| K | F, I | 20 |

Required:

a. Draw the network and show activity times, earliest times to start and earliest times to finish. **9 marks**

b. Bold the line that makes up the critical path on the network diagram. **3 marks**

c. Explain the implication of the critical path. **3 marks**

## QUESTION 2.

A tailor has the following supply of materials to make French suits and American suits: 160 square metres of cotton, 110 square metres of silk and 150 square metres of wool.

A French suit requires the following: 2 square metres of cotton and 1 square metre of silk and one square metre of wool. As well, an American suit requires 1 square metre of cotton, 2 square metres of silk and 3 square metres of wool.

If the gross profit realized from a French suit and an American suit is N150 and N200 respectively, how many of each type of suit should the tailor make to maximize profit? **Show all your steps. 15 marks.**

## QUESTION 3.

A company manufactures a product in three factories, F1, F2 and F3. The three factories ship units of this product to four warehouses, W1, W2, W3 and W4. The demand at each warehouse, the supply / capacity of each factory and the transportation cost per unit (in naira) of the product from each factory to each warehouse are tabulated below.

| | Warehouse $W_1$ | $W_2$ | $W_3$ | $W_4$ | Totals |
|---|---|---|---|---|---|
| $F_1$ | 4 | 8 | 7 | 5 | 2,000 |
| Factories $F_2$ | 3 | 8 | 8 | 4 | 1,700 |
| $F_3$ | 4 | 9 | 7 | 4 | 1,400 |
| Totals | 1000 | 800 | 2100 | 1200 | 5,100 |

a. Solve this transportation problem using the North West-Corner method. **8 marks**

b. Conduct the optimality test via the Modified Distribution (MODI) method. **7 marks**

QUESTION 4.

a. What are the objectives of queue theory? **3 marks**

b. Explain the characteristics of the three components of a queue system. **6 marks**

c. You are given the following summary information:

Arrival rate (A) = 12 per hour

Service rate (S) = 15 per hour

Service times are random

i. Calculate the probability of no queue. **2 marks**

ii. Calculate the number of people on the queue **2 marks**

iii. Calculate the number of people in the system **2 marks**

QUESTION 5.

a. Explain any five major assumptions of games theory. **3 marks**

b. Explain and distinguish clearly between a pure strategy game and a mixed strategy game. **6 marks**

c. Solve for the value of the following mixed strategy game. **6 marks**

| | $Y_1$ | $Y_2$ |
|---|---|---|
| $X_1$ | 6 | 1 |
| $X_2$ | 2 | 8 |

QUESTION 6.

a. Explain the three types of decision-making environments. **4 marks**

b. Given the following table, determine which investment alternative is more beneficial. **6 marks**

| Investment alternatives | States of nature | |
|---|---|---|
| | Economic boom | Economic depression |
| Ordinary share | #110 million | #60 million |
| Preference share | #90 million | #80 million |
| Debenture | #70 million | #50 million |
| Prior probabilities | 0.45 | 0.55 |

c. Explain each of the five decision making criteria under uncertainty. **5 marks.**