UNIVERSITY
OF
JOHANNESBURG

FACULTY OF ENGINEERING AND BUILT ENVIRONMENT

DEPARTMENT	:	**ACADEMIC SUPPORT UNIT**
PROGRAMME	:	FOUNDATION COURSE
SUBJECT	:	OPERATIONS MANAGEMENT 1A (BPJ1A00/BPJ1AY1)
DATE	:	05 DECEMBER 2016
DURATION	:	2 HOURS : (SESSION 1)
TOTAL MARKS	:	100 MARKS
EXAMINER	:	MS E N-ANYADIEGWU
MODERATOR	:	MR S MUKWAKUNGU
NUMBER OF PAGES	:	8

INSTRUCTIONS TO CANDIDATES:

- Answer ALL questions.
- Question paper must be handed in.
- This is a closed book assessment.
- Leave margins and spaces between the questions.
- Show all your calculations.
- Unless otherwise indicated, express your answers correct to one (1) decimal place.
- Where appropriate, indicate the units of your answer. (e.g. Hour, R)
- Write neatly and legibly
- NOTE: Marks will be awarded for theoretical knowledge, application of the theory and use of relevant examples.
- The general University of Johannesburg policies, procedures and rules pertaining to written assessments apply to this examination.

SECTION A [84]

QUESTION 1 [26]

1.1 A fleet repair facility has the capacity to repair 800 trucks per month. However, due to scheduled maintenance of their equipment, management feels that they can repair no more than 600 trucks per month. Last month, two of the employees were absent several days each, and only 400 trucks were repaired. What are the utilization and efficiency of the repair shop? (8)

1.2 The Academic Computing Center has five trainers available in its computer labs to provide training sessions to students. Assume that the capacity of the system is 1900 students per semester and the utilization is 90%. If the number of students who actually got their orientation session is 1500, what is the efficiency of the system? (4)

1.3 Discus the steps in the capacity planning process. (14)

Question 2 [24]

2.1 Discuss six major factors that firms consider when choosing the region/community in which to locate. (12)

2.2 Identify three major quantitative methods for solving location problems. (6)

2.3 A full-service restaurant is considering opening a new facility in a specific city. The table below shows its ratings of four factors at each of two potential sites.

Factor	Weight	Southdale Mall	Clear water mall
Affluence of local population	.20	30	30
Traffic flow	.40	50	20
Parking availability	.20	30	40
Growth potential	.20	10	30

Calculate the score for Southdale Mall and the score for Clear water mall (6)

QUESTION 3 **[16]**

Miss Rembu sells flower pots at county fairs. The variable cost to make each pot is R20 each, and she sells them for R50. The cost to rent a booth at the fair is R150.

3.1 How many of these must Miss Rembu sell to break-even? (4)

Miss Rembu is trying to find a new supplier that will reduce her variable cost of production to R15 per unit. If she was able to succeed in reducing this cost;

3.2 What would the break-even point be? (4)

3.3 What would the total revenue be at this break-even point? (4)

3.4 What are the major differences between break-even analysis and factor rating method in location analysis? (4)

Question 4 **[20]**

Dlamini Ceramics spent currently R11000 on a new kiln in the belief that it would cut energy usage 20% over the old kiln. This kiln is an oven that turns "greenware" into finished pottery.

4.1 Ms Dlamini wants you to check the energy savings of the new oven if it was really beneficial as anticipated. (6)

Ms Dlamini has the following data to work with:

	Last year	Now
Units produced	1,000	1,000
Labour (hours)	300	275
Resin (pounds)	50	45
Capital invested (R)	10,000	11,000
Energy	3,000	2,850

4.2 She determines her costs to be as follows; (14)

- Labour: R10 per hour
- Resin: R5 per pound
- Capital expense: 1% per month of investment
- Energy: R50 per BTU.

From the data above show the percent change in productivity for last year versus this year. Also, calculate the multifactor productivity (with Rand as the common denominator) for each and compare. Must be rounded up to 4 decimal places.

SECTION B: MULTIPLE CHOICE [16]

Read the Questions below and Choose and shade the correct option in your scanner sheet.

1. A full-service restaurant is considering opening a new facility in a specific city. The table below shows its ratings of four factors at each of two potential sites.

Factor	Weight	Gary Mall	Belt Line
Affluence of local population	.20	30	30
Traffic flow	.40	50	20
Parking availability	.20	30	40
Growth potential	.20	10	30

The score for Gary Mall is _____ and the score for Belt Line is _____.

a. 120; 120
b. 22; 24
c. 18; 120
d. 34; 28
e. none of the above

2. The center-of-gravity method does **not** take into consideration the
a. location of markets
b. volume of goods shipped to the markets

c. value of the goods shipped

d. combination of volume and distance

e. center-of-gravity method considers none of the above

3. Which of the following is most likely to affect the location decision of a service firm rather than a manufacturing firm?
a. energy and utility costs

b. attitude toward unions

c. parking and access

d. cost of shipping finished goods

e. labour costs

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4. The cost of shipment is always considered in which of the following location decision methods?

a. factor rating method

b. transportation method

c. locational break-even analysis

d. center-of-gravity method

e. crossover analysis

5. A regional bookstore chain is about to build a distribution center that is centrally located for its eight retail outlets. It will most likely employ which of the following tools of analysis?

a. assembly line balancing

b. load-distance analysis

c. center-of-gravity model

d. linear programming

e. all of the above

6. Industrial location analysis typically attempts to

a. reduce costs

b. maximize sales

c. focus more on human resources

d. be environmentally friendly
e. none of the above

7. Governmental attitudes toward issues such as private property, intellectual property, zoning, pollution, and employment stability may change over time. The term associated with this phenomenon is
a. bureaucratic risk
b. political risk
c. legislative risk
d. judicial risk
e. democratic risk

8. A location decision for an appliance manufacturer would tend to have a(n)
a. cost focus
b . labour focus
c. revenue focus
d. environmental focus
e. education focus

9. The center-of-gravity method does **not** take into consideration the
a. location of markets
b. volume of goods shipped to the markets
c. value of the goods shipped
d. combination of volume and distance
e. center-of-gravity method considers none of the above

10. The center-of-gravity method is used primarily to determine what type of locations?
a. service locations
b. manufacturing locations
c. distribution center locations
d. supplier locations
e. call center locations

11. The transportation method, when applied to location analysis
    a. minimizes total fixed costs
    b. minimizes total production and transportation costs
    c. maximizes total transportation costs
    d. maximizes revenues
    e. minimizes the movement of goods

12. Which of the following is usually not one of the top considerations in choosing a country for a facility location?
    a. availability of labour and labour productivity
    b. exchange rates
    c. attitude of governmental units
    d. zoning regulations
    e. location of markets

13. Which of these factors would be considered when making a location decision at the region/community level?
    a. government rules, attitudes, stability, incentives
    b. cultural and economic issues
    c. zoning restrictions
    d. environmental impact issues
    e. proximity to raw materials and customers

14. Which of the following is most likely to affect the location decision of a service firm rather than a manufacturing firm?
    a. energy and utility costs
    b. attitude toward unions
    c. parking and access
    d. cost of shipping finished goods
    e. labour costs

15. Operations managers will need to consider ethical and social responsibility issues when location decisions involve
    a. child labour issues
    b. sweatshop conditions
    c. allegiance to the firm's current location
    d. corruption
    e. all of the above

16. A firm is seeking a new factory location, and is considering several countries worldwide. In some of these countries, child labour is prevalent; in others, working conditions and worker safety are inferior to conditions in South Africa. An operations manager paying attention to _____will factor these issues into the location decision.
    a. ethical and social responsibility issues
    b. critical success factors
    c. factor rating systems
    d. geographic information systems
    e. regression models

TOTAL MARKS **[100]**

END OF ASSESSMENT