

BUSI 2301 D Operations Management
Quiz 1 (Total Marks 50)
September 30, 2011

Maximum Time: 1 hour 30 minutes

Name: _____ Student ID: _____

Return this question sheet along with your answer sheet; be sure to write your **name** and **student ID** on the question sheet. Tests that cannot be fully identified may be assigned a mark of zero.

Texas Instruments BA II Plus calculators are permitted, as are printed non-electronic translation dictionaries (e.g., English-Spanish).

Section 1 - Multiple Choice (Total Marks 30)

For each multiple-choice question, choose the best answer from the list given and circle it on this question sheet. You may use scrap paper for your rough calculations, but only the final answer will be marked. Each question is worth [2] marks.

1. Value-added refers to:
 - A) the cost of inputs
 - B) the price of outputs
 - C) the difference between cost of inputs and what customers are willing to pay
 - D) the extra profit obtained from increased productivity
 - E) all of the choices are correct

2. Productivity is expressed as:
 - A) output plus input
 - B) output minus input
 - C) output times input
 - D) output divided by input
 - E) input divided by output

3. Given forecast errors of 4, 8, and -3, what is the mean absolute deviation?
- A) 4
 - B) 3
 - C) 5
 - D) 6
 - E) 12

4. Given the following information, the utilization is:

Effective capacity = 20 units per day

Design capacity = 60 units per day

Actual output = 15 units per day

- A) $1/4$
 - B) $1/3$
 - C) $1/2$
 - D) $3/4$
 - E) none of these
5. Disadvantages of naive forecasts include:
- I. time-consuming
 - II. not very accurate
 - III. does not smooth random variations
- A) I, II and III
 - B) I and II
 - C) I and III
 - D) II and III
 - E) none of the choices are disadvantages
6. Which technique is useful in computing seasonal relatives?
- A) double smoothing
 - B) Delphi technique
 - C) MSE
 - D) centred moving average
 - E) exponential smoothing

7. Given the following historical data and weights of .5, .3, and .2, what is the three-period moving average forecast for period 5?

<u>Period</u>	<u>Value</u>	<u>Period</u>	<u>Value</u>
1	138	3	148
2	142	4	144

- A) 144.20
B) 144.80
C) 144.67
D) 143.00
E) 144.00
8. Which of the following is a key step towards improving productivity?
- A) Develop focussed productivity measures on critical areas.
B) Use an efficiency perspective.
C) Measure improvements and publicize them.
D) Establish difficult and challenging goals for improvement.
E) All of the choices are key steps
9. Seasonal variations are often easier to deal with in capacity planning than random variations because seasonal variations tend to be:
- A) smaller
B) larger
C) predictable
D) controllable
E) less frequent
10. The following equation is used to predict quarterly demand: $Y_t = 350 - 2.5t$, where $t = 0$ in the second quarter of last year. Quarter relatives are $Q1 = 1.5$; $Q2 = 0.8$; $Q3 = 1.1$; and $Q4 = 0.6$. What is the forecast for the last quarter of this year?
- A) 201
B) 335
C) 268
D) 199.5
E) 266

11. In a study of innovative projects at Hewlett-Packard, it was discovered that all of the following were required ingredients for innovation EXCEPT:
- A) successful sales strategies.
 - B) management support.
 - C) systematic product design process.
 - D) skilled and helpful people.
 - E) All of the choices are required ingredients
12. Which of the following is not a stage in the life cycle of products and services?
- A) incubation
 - B) growth
 - C) adolescence
 - D) saturation
 - E) decline
13. The three primary functions that exist in most business organizations are:
- A) manufacturing, production, and operations
 - B) operations, marketing, and finance
 - C) operations, accounting, and marketing
 - D) operations, production, and finance
 - E) none of the choices are correct
14. System capacity and placement of equipment are examples of:
- A) financial decisions
 - B) tactical decisions
 - C) systems design decisions
 - D) system operation decisions
 - E) forecasting decisions
15. Coleman, known for making camping gear, started producing a smoke alarm with large buttons that could be shut off with a broom handle. This was an example of which approach to finding new product ideas?
- A) Listening to market complaints
 - B) Gaps in the market
 - C) Exploring niche markets
 - D) Using new technology
 - E) Creating new market space

Section 2 - Calculation (Total Marks 20)

Complete your answer on this question sheet itself. You may use the back of your question sheet for rough calculations.

1. The utilization of a machine is 50%. The machine has a design capacity of 70 units per hour and an effective capacity of 60 units per hour. Find the efficiency of the machine.

Use the following to answer the following questions:

<u>Time Period</u>	<u>Demand</u>
7 years ago	7
6 years ago	28
5 years ago	21
4 years ago	42
3 years ago	35
2 years ago	56
Last year	49

a. What is this year's forecast using the naive approach?

b. What is this year's forecast using a four-year simple moving average?

c. What is this year's forecast using exponential smoothing with $\alpha = .25$, if last year's smoothed forecast was 45?

d. What are this and next year's forecasts using the least squares trend line for these data?

