

**BUS 3500 – PRODUCTION AND OPERATIONS
MANAGEMENT**

FINAL EXAMINATION

Tuesday, May 3, 2005

9.30 AM – 11.30 AM

TOTAL = 300 Points

1. True/False-Multiple Choice	100 points
2. Questions	50 points
3. Problems	100 points
4. Match the Following	<u>50 points</u>
Total	300 points

Production and Operations Management - BUS 3500
FINAL EXAMINATION

I. Questions (100). For True/False question, please mark "A" for True and "B" for False on your scantron.

1. Like cost, quality, and timeliness; processes and capabilities are also viewed by customers as a component of value.
A) True
B) False

2. The most tangible resources managed by any business include inventory, capacity, facilities and patents.
A) True
B) False

3. According to the resource/profit model, the three concepts that form the foundation for decision making throughout the business include:
A) Profit, value and strategy
B) Profitability, value and strategy
C) Value, strategy and customer focus
D) Strategy, profit, and customer focus
E) None of the above

4. The difference between something's market value and the cost of creating it is referred to as the:
A) Net worth
B) Net present value
C) Return on investment
D) Return on assets
E) Profit

Use the following to answer questions 5-7:

A retailer of electronic products has asked a particular manufacturer to begin daily deliveries rather than on a weekly basis. Currently the manufacturer delivers 1000 cases each Monday. The cost of each case is valued at \$300.

5. The average inventory (in units) with weekly shipments is:
 - A) 1000
 - B) $1000/7$
 - C) $1000/5$
 - D) 500
 - E) None of the above

6. The average inventory (in dollars) with weekly shipments is:
 - A) 300,000
 - B) 100000
 - C) 60000
 - D) 150000
 - E) None of the above

7. The average inventory (in dollars) for the daily delivery pattern, assuming 20 days/month, is:
 - A) 30,000
 - B) 300,000
 - C) 60000
 - D) 90,000
 - E) None of the above

8. Any measure of investment success must also provide a measure of the productivity of the resources involved.
 - A) True
 - B) False

9. B2C and B2B are the two primary customers in the resource/profit model.
A) True
B) False
10. Convenience, along with price, is also a very important value attribute for busy college students.
A) True
B) False
11. Which of the following is not a component of the supply chain network?
A) Converters
B) Fabricators
C) Assemblers
D) Marketers
E) Customers
12. The most influential component of value is:
A) Processes and capabilities
B) Costs
C) Quality
D) Timeliness
E) Flexibility
13. The focus strategy seeks a small portion of the broad market.
A) True
B) False
14. A product or service characteristic that is most important to a particular customer is referred to as an order qualifier.
A) True
B) False

15. Porter's three strategy categories include:
- A) Cost leader
 - B) Differentiation
 - C) Quality focus
 - D) Only A and B
 - E) A, B, and C
16. Which of the following statement is not true about capacity?
- A) Capacity decisions determine output capabilities
 - B) Capacity is generally defined in terms of an output rate
 - C) All five competitive priorities can be linked to capacity
 - D) Design capacity is the capacity a facility is designed to accommodate on an ongoing basis
 - E) For any facility, cost per unit is at its lowest when the production or service rate exceeds the design capacity
17. Processes can be viewed as the components of capabilities, just as small parts are the components of finished products.
- A) True
 - B) False
18. Order qualifiers are necessary and sufficient to win a customer.
- A) True
 - B) False
19. Conceptually, what type of layout can be viewed as a linear series of processing steps?
- A) Product-oriented layout
 - B) Process-oriented layout
 - C) Functional layout
 - D) Cellular layout
 - E) Mixed layout

20. Transportation time and cost of moving customers is a disadvantage of:
- A) Product-oriented layout
 - B) Functional layout
 - C) Cellular layout
 - D) Mixed layout
 - E) None of the above
21. In services, appraisal costs are often a much greater portion of the total cost of quality because of the customer interaction.
- A) True
 - B) False
22. Scatter diagrams are helpful in understanding the relationship between changes in a variable measure over time.
- A) True
 - B) False
23. Which of the following is both a product and service quality dimension?
- A) Features
 - B) Responsiveness
 - C) Reliability
 - D) Assurance
 - E) Tangibles
24. Inspection can be classified under:
- A) Internal failure cost
 - B) External failure cost
 - C) Appraisal cost
 - D) Prevention cost
 - E) None of the above
25. When using casual forecasting models, the appearances of a relationship between demand and an external variable may be due to coincidence, rather than a true correlation.
- A) True
 - B) False

26. The forecasting technique that allows manager to use external data for forecasting is referred to as:
- A) Qualitative techniques.
 - B) Simple exponential smoothing
 - C) Simple Moving Average
 - D) Causal forecasting
 - E) Weighted moving average
27. Which of the component of time series that cannot, by definition, is forecast?
- A) Cycle
 - B) Trend
 - C) Seasonality
 - D) Random fluctuation
 - E) None of the above
28. The most popular measure of absolute error is:
- A) MSE
 - B) MAD
 - C) MAPE
 - D) MFE
 - E) RSFE
29. Transportation cost is an example of:
- A) Item cost
 - B) Ordering cost
 - C) Carrying cost
 - D) Stockout cost
 - E) Storage cost
30. Which of the following is a cost associated with inventory?
- A) Setup costs
 - B) Carrying costs
 - C) Stockout costs
 - D) Actual cost of purchasing the inventory item
 - E) A, B, and C
 - F) A, B, C, and D

31. Which of the following statement(s) is/are true about excess inventory?
- A) Excess inventory can increase the time to market for a new product by forcing a delay in its introduction
 - B) Excess inventory also increases the cash-to-cash cycle.
 - C) Excess inventory has a negative effect on product quality
 - D) Both A and B
 - E) Both A and C
 - F) Both A, B and C
32. Independent demand is, by definition, uncertain demand.
- A) True
 - B) False
33. Despite the link between customer and value, in many companies, management does not want employees to interact with customers.
- A) True
 - B) False
34. Reduction of labor costs (direct and indirect) has always been the goal of management.
- A) True
 - B) False
35. Which of the following is not an advantage of using teams?
- A) Teams bring different perspectives and expertise in the projects
 - B) Tasks can be assigned to the various members and the duration of the project can be reduced
 - C) Teams give us greater buy-in
 - D) Teams actually get less done
 - E) Teams give us greater capability

36. The resultant time, after the performance rating has been applied to the observed time, is known as:
- A) Standard time
 - B) Normal time
 - C) Expected time
 - D) Task time
 - E) None of the above
37. A pre-requisite to understanding JIT is recognizing its overriding objective of inventory reduction.
- A) True
 - B) False
38. A kaizen workshop is a one-week marathon of tearing down an entire department and completely re-designing its processes.
- A) True
 - B) False
39. Which of the following is not a waste reduction focus of JIT?
- A) Waiting time waste
 - B) Information processing waste
 - C) Unnecessary motion waste
 - D) Product defect waste
 - E) Transportation waste
40. Which of the following statement is not true about kanban?
- A) Kanban is Japanese for "visible record" or "signal."
 - B) Kanban system utilizes small buffers of inventory between work centers, departments, and manufacturing plants.
 - C) Kanban systems are used to link the production rate to the demand rate.
 - D) In Kanban, the demand pulls products through the system.
 - E) Kanban systems can only link work centers together that are physically adjacent to each other.

41. Process-focused benchmarking is used when a business wants to identify a best practice for a process that is industry specific.
A) True
B) False
42. The Quality Cup, is a national quality award that focuses on the accomplishment of teams.
A) True
B) False
43. The stage of the PDCA where the improvement becomes enterprise-wide is referred to as:
A) Plan
B) Do
C) Check
D) Act
E) None of the above
44. The PDCA cycle creates a structure for the continuous improvement process that reinforces the use of data in making decisions.
A) True
B) False
45. Deming developed the use of statistical process control charts, which provide an opportunity to control the variability of processes.
A) True
B) False
46. ISO 9000 clearly specify a level of product or service quality that needs to be achieved.
A) True
B) False

47. Workforce-focused techniques include:
- A) Involvement
 - B) Cross-training
 - C) Automation
 - D) Both A and B
 - E) A, B, and C
48. Customer's perception of value depends on the types of business outputs being produced and on the type of consumer buying them.
- A) True
 - B) False
49. A company's strategy is not necessarily what it publicly says it is.
- A) True
 - B) False
50. Flexibility can translate into:
- A) New customers
 - B) Stronger relationship with existing customers
 - C) Greater short-term profitability
 - D) Both A and B
 - E) Both B and C
 - F) A, B, and C

II. Answer the following questions (50). Questions 1 to 10 carry 3 points each (30 points) and questions 11 to 20 carry 2 points each (20 points).

1. Define Operations Management.

- a. _____

2. What are the two intangible resources that create value?

- a. _____
b. _____

3. What are the dimensions of Cost of Quality (COQ)?

- a. _____
b. _____
c. _____
d. _____

4. What are the four components of a time series?

- a. _____
b. _____
c. _____
d. _____

5. What are the four kinds of inventory costs?

- a. _____
b. _____
c. _____
d. _____

6. What are the four stages of the Project Life Cycle?

- a. _____
b. _____
c. _____
d. _____

7. What are the three components of TQM?

- a. _____
b. _____
c. _____

8. Define Benchmarking.
- a. _____

9. What are the two most famous quality awards in America?
- a. _____
b. _____
10. What are the components of a Supply Chain?
- a. _____
b. _____
c. _____
d. _____
11. _____ is the primary objective of any business.
12. _____ costs are directly related to the volume of output.
13. "Will the business treat me as special?" is a consumer concern for _____ value attribute.
14. _____ oriented layout provides the necessary resources in a fixed sequence that matches the sequence of the steps required to produce the product or service.
15. The "P" in the PDCA cycle stands for _____.
16. _____ focused benchmarking seeks to identify the best practices among competitors.
17. _____ time wastes results from customer orders, inventory, or completed products waiting in queue for a process to begin.
18. Additional inventory, known as _____ stock, is used to help cope with demand uncertainty.
19. _____ costs are not directly related to the volume of output.
20. _____ demand is not determined directly by the market.

IV. Problems (100).

1. A brokerage firm provides newly hired associates a list of contacts that they are required to call on in hopes of building their client base. The first contact is by mail with a personal letter. The second call is by telephone, with the objective of setting up a face-to-face meeting to discuss investments. The following table shows data collected over the past year for five new associates (15 points)

Broker	Contacts Given	Mailings	Phone Calls	Meetings Scheduled	Meetings Completed	Resulting Sales	Total Sales
Armstrong	450	450	450	43	42	28	724,000
Fredrick	450	450	450	64	52	16	380,000
Davis	450	450	450	85	55	12	520,000
Foster	450	450	450	70	61	32	643,000
Kinney	450	450	450	30	26	19	256,000

- a. Who was best able to convert a phone call into an agreement to meet face-to-face?

- b. Who was best able to convert a commitment to meet into an actual meeting?

- c. When meeting, which broker seems best able to turn the client into an investor?

- d. Who is the most productive of the brokers in total sales? And in sales per customer?

2. Willie is the head greens keeper at Par Four Golf Course. He recently found out that the golfers prefer the fringe of the greens to be kept between a half inch and inch in length. Willie has a riding mower that can cut a mean of 0.75 inch with a standard deviation of 0.11 inch. Compute the Cp. (10 points)

3. Mr. Pizza calculates demand for its pizzas in slices. Last month, Mr. Pizza sold 5,025 slices of its pizzas. The company anticipates selling 5,125 slices for the current period. Use a simple exponential smoothing model with a smoothing constant of 0.1 to forecast demand. What is the result if you use a smoothing constant of 0.4? (10 points)

4. Morris Dining Hall is the primary dining hall for students living in the dormitory. It conducted a study on the amount of time students needed to use the dining hall's services. The results of the study are given below. Provide an X-bar chart and an R-bar chart. (15 points)

Sample Number	Observation 1	Observation 2	Observation 3
1	30	18	47
2	8	21	32
3	16	22	26
4	32	48	53
5	16	24	19
6	12	21	27
7	22	19	32
8	26	31	15

$$A2 = 1.023; D4 = 2.574; D3 = 0$$

5. The following table shows the forecasted number of students and the actual number of students enrolled in State University Production and Operations Management course. Calculate the following forecasting errors: MAD, MSE, and the MFE. (15 points)

Year	Actual	Forecast
1985	67	65
1986	68	65
1987	71	65
1988	73	65
1989	63	65
1990	61	65
1991	62	65
1992	64	65
1993	68	65
1994	71	65

6. You have been observing an employee, Kim, of the real estate agency of Walker & Smith. The employee is preparing a listing of houses that are for sale. It has taken Kim 20 minutes to complete the task and she is believed to be 30 percent faster than the typical employee. If an allowance of 10 percent is required, how long should it take the average employee to prepare a listing of houses for sale? **(10 points)**
7. J&R Investments surveyed its clients on the reasons they chose to invest with the company. Some 49 percent responded that it was due to the high returns that J&R funds offered; 15 percent attributed their selection to the variety of funds that the company offered; 23 percent felt J&R's reputation was worthy of their business; 13 percent were won over by the company's security. The company received a total of 150 responses. Perform a Pareto analysis. **(10 points)**

8. Net Sales = \$100,000; Cost of Goods sold = \$42,000 ; Depreciation = \$5,000 ; Interest paid = \$5,000 ; Taxes = \$10,000; Equity = \$50,000 ; Asset = \$55,000.
(15 points)

- a. Find Net Income
- b. Find ROA
- c. Find ROE
- d. Find the Profit Margin

IV. Match the Following (50). Please do not use lines to match.

- | | |
|---|---------------------------------|
| 1. Customer Focus | TQM component |
| 2. Physical facilities and equipment | Act |
| 3. "A" in the PDCA cycle | Workforce-focused JIT technique |
| 4. Paperless transaction | Helps in workforce flexibility |
| 5. Employee involvement | EOQ |
| 6. Excess inventory | Time series component |
| 7. Use of contingent workers | Cause and Effect diagrams |
| 8. Most important employee contribution | Functional layout |
| 9. How much to order? | Human Resources |
| 10. Mother board for Dell laptops | A consumer value attribute |
| 11. Seasonality | Tangibles |
| 12. Low demand in the market | Inventory-focused JIT technique |
| 13. Helps identify the cause of the problem | Inventory waste |
| 14. Appraisal costs | Teams |
| 15. Process-oriented layout | Dependent demand |
| 16. Winning over a customer | Introduction stage |
| 17. Infrastructural decisions | Cost of Quality component |
| 18. Business strategy | Order winner |
| 19. Response time | Focus strategy |
| 20. Transforms inputs into components | Fabricators |
| 21. Comes up with basic raw materials | Basic producers |
| 22. Cannot meet demand | Stockout |
| 23. How well did stockholders do | ROE |
| 24. How much profit generated per dollar | Profit margin |
| 25. Primary objective of a business | Profitability |