**Chapter 8: Supply Chain Design and Location Planning**

**Practice Problems**

**MULTIPLE CHOICE**

Universal Exports, LTD. has its executives travel extensively around the world. They are reviewing their travel contracts. They wish to enter into an exclusive arrangement with one airline. They have conducted a review and produced the following analysis.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Criteria | Weight | United Airlines | JAL | Hainan Airlines | Nippon Airlines |
| On Time | 4 | 8 | 10 | 7 | 9 |
| Cost | 5 | 7 | 6 | 10 | 6 |
| Frequent Flyer Program | 4 | 9 | 7 | 6 | 8 |
| Number of Routes | 2 | 10 | 7 | 5 | 7 |
| Available Communication Options | 3 | 7 | 8 | 6 | 9 |
| Amenities | 1 | 6 | 8 | 4 | 9 |

1. What would be the score for United Airlines?

|  |  |
| --- | --- |
| a. | 134 |
| b. | 144 |
| c. | 148 |
| d. | 150 |

ANS: D PTS: 1 DIF: Easy

2. What would be the score for JAL Airlines?

|  |  |
| --- | --- |
| a. | 134 |
| b. | 144 |
| c. | 148 |
| d. | 150 |

ANS: B PTS: 1 DIF: Easy

3. What would be the score for Hainan Airlines?

|  |  |
| --- | --- |
| a. | 134 |
| b. | 144 |
| c. | 148 |
| d. | 150 |

ANS: A PTS: 1 DIF: Easy

4. What would be the score for Nippon Airlines?

|  |  |
| --- | --- |
| a. | 134 |
| b. | 144 |
| c. | 148 |
| d. | 150 |

ANS: C PTS: 1 DIF: Easy

5. What would be the best airline?

|  |  |
| --- | --- |
| a. | United |
| b. | JAL |
| c. | Hainan |
| d. | Nippon |

ANS: A PTS: 1 DIF: Easy

Melkior Accountants have global operations. They are considering moving their corporate headquarters from Los Angeles. They have identified six criteria that they view as essential in the decision making process. Melkior has generated the following matrix, with a weighting scale of 1-5.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Criteria | Weight | Salt Lake City | Boston | Berlin | Hong Kong |
| Tax Incentives | 4 | 50 | 60 | 40 | 80 |
| Labor Costs | 4 | 50 | 30 | 60 | 90 |
| Skill Availability | 5 | 40 | 80 | 90 | 70 |
| Utility Costs | 4 | 70 | 60 | 75 | 60 |
| Transportation Availability | 2 | 80 | 90 | 90 | 75 |
| Site Costs | 3 | 60 | 40 | 55 | 50 |

6. Based on this matrix, what would be the score for Salt Lake City?

|  |  |
| --- | --- |
| a. | 1570 |
| b. | 1354 |
| c. | 1220 |
| d. | 1445 |

ANS: C PTS: 1 DIF: Easy

7. Based on this matrix, what would be the score for Boston?

|  |  |
| --- | --- |
| a. | 1220 |
| b. | 1300 |
| c. | 1470 |
| d. | 1540 |

ANS: B PTS: 1 DIF: Easy

8. Based on this matrix, what would be the score for Berlin?

|  |  |
| --- | --- |
| a. | 1260 |
| b. | 1370 |
| c. | 1495 |
| d. | 1550 |

ANS: C PTS: 1 DIF: Easy

9. Based on this matrix, what would be the score for Hong Kong?

|  |  |
| --- | --- |
| a. | 1220 |
| b. | 1300 |
| c. | 1495 |
| d. | 1570 |

ANS: D PTS: 1 DIF: Easy

10. What would be the scores for Salt Lake City, Boston, Berlin, and Hong Kong, respectively?

|  |  |
| --- | --- |
| a. | 1200, 1340, 1495, 1550 |
| b. | 1220, 1300, 1450, 1550 |
| c. | 1220, 1300, 1495, 1570 |
| d. | 1270, 1320, 1450, 1550 |

ANS: D PTS: 1 DIF: Easy

11. Melkior Accountants’ CEO is considering moving their corporate headquarters from Los Angeles to another city. They have identified six criteria that they view as essential in the decision-making process and generated the following matrix, with a weighting scale from 0-100.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Criteria | Weight | Salt Lake City | Boston | Berlin | Hong Kong |
| Tax Incentives | 85 | 50 | 60 | 40 | 80 |
| Labor Costs | 80 | 50 | 30 | 60 | 90 |
| Skill Availability | 95 | 40 | 80 | 90 | 70 |
| Utility Costs | 75 | 70 | 60 | 75 | 60 |
| Transportation Availability | 50 | 80 | 90 | 90 | 75 |
| Site Costs | 45 | 60 | 40 | 55 | 50 |

Using this weighting scheme, what would be the scores for Salt Lake City, Boston, Berlin, and Hong Kong, respectively?

|  |  |
| --- | --- |
| a. | 12,600; 14,750; 25,400; 27,000 |
| b. | 16,900; 23,400; 29,350; 32,000 |
| c. | 24,000; 25,900; 29,350; 31,150 |
| d. | 25,900; 29,350; 30,700; 33,350 |

ANS: C PTS: 1 DIF: Easy

Baylor Communications is planning on significant cost reductions. It is reviewing three of its call centers. They are considering consolidating these centers and want to know the economics of each of these centers. The longest call that these centers handle is associated with resetting customer’s cable boxes. The data for the centers are given below.

|  |  |  |  |
| --- | --- | --- | --- |
|  | Fixed Cost | Variable Cost/call | Selling Price/call |
| Westport, CT | $600,000 | $2.10 | $5.25 |
| Springfield, MA | $800,000 | $1.90 | $5.25 |
| Dover, DE | $900,000 | $1.50 | $5.25 |

It is estimated that these calls produce $5.25 in customer good will (think of it as equivalent to the selling price).

12. What is the breakeven point in calls (rounded) for Westport, CT?

|  |  |
| --- | --- |
| a. | 75,326 |
| b. | 187,640 |
| c. | 190,476 |
| d. | 215,763 |

ANS: C PTS: 1 DIF: Easy

13. What is the breakeven point in calls (rounded) for Springfield, MA?

|  |  |
| --- | --- |
| a. | 188,364 |
| b. | 190,476 |
| c. | 226,964 |
| d. | 238,806 |

ANS: D PTS: 1 DIF: Easy

14. What is the breakeven point in calls (rounded) for Dover, DE?

|  |  |
| --- | --- |
| a. | 202,940 |
| b. | 238,806 |
| c. | 240,000 |
| d. | 258,762 |

ANS: C PTS: 1 DIF: Easy

15. Assume that each center has 400,000 calls. What would be the ‘profit’ at the Westport, CT center?

|  |  |
| --- | --- |
| a. | $820,000 |
| b. | $180,000 |
| c. | $590,000 |
| d. | $660,000 |

ANS: D PTS: 1 DIF: Medium

16. If the three centers each had 800,000 calls, what would be the ‘profit’ at Westport, CT; Springfield, MA; and Dover, DE, respectively?

|  |  |
| --- | --- |
| a. | $240,000; $1,340,000; $2,240,000 |
| b. | $660,000; $2,200,000; $2,860,000 |
| c. | $1,920,000; $1,880,000; $2,100,000 |
| d. | $2,220,000; $1,880,000; $1,960,000 |

ANS: C PTS: 1 DIF: Medium

The Great Eastern Shoe Company produces athletic shoes for a variety of companies. Currently they are reexamining all of their factories’ efficiencies. They are doing this on a country by country basis. Great Eastern has two factories in Vietnam:one in Saigon, and one in Ho Chi Minh City. Economic data for the two factories are given below.

|  |  |  |  |
| --- | --- | --- | --- |
|  | Fixed Cost | Variable Cost | Selling Price |
| Saigon | $100,000 | $10.00 | $30 |
| Ho Chi Minh City | $180,000 | $6.00 | $30 |

17. What is the breakeven point and the number of shoes produced for the Saigon factory?

|  |  |
| --- | --- |
| a. | 100,000 |
| b. | 20,000 |
| c. | 7,500 |
| d. | 5,000 |

ANS: D PTS: 1 DIF: Easy

18. What is the breakeven point in shoes produced for the Ho Chi Minh City factory?

|  |  |
| --- | --- |
| a. | 100,000 |
| b. | 20,000 |
| c. | 7,500 |
| d. | 5,000 |

ANS: C PTS: 1 DIF: Easy

19. What is the optimal range of shoe production for the Saigon factory vis-à-vis the Ho Chi Minh City factory?

|  |  |
| --- | --- |
| a. | 0 – 10,000 |
| b. | 0 – 20,000 |
| c. | 20,000 – 50,000 |
| d. | None of these |

ANS: B PTS: 1 DIF: Medium

20. What is the optimal range of production for the Ho Chi Minh city factory vis-à-vis the Saigon factory?

|  |  |
| --- | --- |
| a. | less than 20,000 |
| b. | greater than 20,000 |
| c. | greater than 40,000 |
| d. | None of these |

ANS: B PTS: 1 DIF: Medium

For the sake of their children, Ed and Lorraine McMahon are moving out of the city to the suburbs. They’re looking for different homes in a suburb that is near to where both of them work. In order to assist them in determining what home they should place a bid on, they created the following matrix where the higher the score, the greater the value.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Weight | Baker Street | Melody Lane | Madison Street | High Avenue |
| Commute Time Husband | 3 | 6 | 5 | 7 | 8 |
| Commute Time Wife | 4 | 9 | 3 | 6 | 4 |
| Schools | 5 | 8 | 8 | 9 | 5 |
| Public Safety | 4 | 3 | 10 | 8 | 6 |
| Recreation Facilities | 2 | 4 | 8 | 6 | 10 |

21. Based on this matrix, what would be the “best” home to put a bid on?

|  |  |
| --- | --- |
| a. | Baker Street |
| b. | Melody Lane |
| c. | Madison Street |
| d. | High Avenue |

ANS: C PTS: 1 DIF: Medium

22. Based on this matrix, what would be the “worst” home to put a bid on?

|  |  |
| --- | --- |
| a. | Baker Street |
| b. | Melody Lane |
| c. | Madison Street |
| d. | High Avenue |

ANS: D PTS: 1 DIF: Medium

23. Initially, Ed didn’t think that they would weight the criteria. Assuming he used equal weights (same as using no weights at all), what would be the ranking of the four addresses (from most attractive to least attractive)?

|  |  |
| --- | --- |
| a. | Madison Street, Melody Lane, High Avenue, Baker Street |
| b. | Baker Street, High Avenue, Melody Lane, Madison Street |
| c. | Melody Lane, Madison Street, Baker Street, High Avenue |
| d. | They would be the same |

ANS: A PTS: 1 DIF: Medium

Jenkins Manufacturing produces a wide variety of plastic products, mostly for major department stores. They are gearing up for production of their deluxe lawn sprinkler. Currently, they can produce the deluxe lawn sprinkler at four manufacturing locations–their Cincinnati factory, their San Diego factory, their St. Paul factory, and their largest production facility in Atlanta. The accounting data for producing the deluxe lawn sprinkler is given in the table below. The selling price for Jenkin’s lawn sprinkler is $21 per unit.

|  |  |  |  |
| --- | --- | --- | --- |
|  | Fixed Cost | Variable Cost | Selling Price |
| Cincinnati | $350,000 | $18.00 | $21.00 |
| San Diego | $475,000 | $15.00 | $21.00 |
| St. Paul | $320,000 | $16.00 | $21.00 |
| Atlanta | $385,000 | $12.00 | $21.00 |

24. What is the breakeven point in the number of units for the Cincinnati plant?

|  |  |
| --- | --- |
| a. | 42,778 |
| b. | 64,000 |
| c. | 79,167 |
| d. | 116,667 |

ANS: D PTS: 1 DIF: Easy

25. What is the breakeven point in the number of units for the San Diego plant?

|  |  |
| --- | --- |
| a. | 42,778 |
| b. | 64,000 |
| c. | 79,167 |
| d. | 116,667 |

ANS: C PTS: 1 DIF: Easy

26. What is the breakeven point in units for the St. Paul plant?

|  |  |
| --- | --- |
| a. | 42,778 |
| b. | 64,000 |
| c. | 79,167 |
| d. | 116,667 |

ANS: B PTS: 1 DIF: Easy

27. What is the breakeven point in units for the Atlanta plant?

|  |  |
| --- | --- |
| a. | 42,778 |
| b. | 64,000 |
| c. | 79,167 |
| d. | 116,667 |

ANS: A PTS: 1 DIF: Easy

28. In comparing the Cincinnati plant to the San Diego plant, what would be the necessary demand for lawn sprinklers that would make the San Diego facility more profitable than the Cincinnati facility?

|  |  |
| --- | --- |
| a. | Cincinnati is always superior to San Diego. |
| b. | Cincinnati is always inferior to San Diego. |
| c. | Cincinnati is superior to San Diego for the range 0 – 41,667. |
| d. | Cincinnati is inferior to San Diego for the range 0 – 41,667. |

ANS: C PTS: 1 DIF: Hard

29. In comparing the San Diego plant to the St. Paul plant, what would be the necessary demand for lawn sprinklers that would make the St. Paul facility more profitable than the San Diego facility?

|  |  |
| --- | --- |
| a. | St. Paul is superior to San Diego. |
| b. | St. Paul is inferior to San Diego. |
| c. | St. Paul is superior to San Diego for the range 0 – 155,000. |
| d. | St. Paul is superior to San Diego for the greater than 155,000. |

ANS: C PTS: 1 DIF: Hard

30. In comparing the St. Paul plant to the Atlanta plant, what would be the necessary demand for lawn sprinklers that would make the Atlanta facility more profitable than the St. Paul facility?

|  |  |
| --- | --- |
| a. | Atlanta is always superior to St. Paul. |
| b. | Atlanta is always inferior to St. Paul. |
| c. | Atlanta is always superior to St. Paul for the range 0 – 16,250. |
| d. | Atlanta is always superior to St. Paul for greater than 16,250. |

ANS: D PTS: 1 DIF: Hard

31. If Wal-Mart placed an order for 100,000 deluxe lawn sprinklers from Jenkins, what facility would you recommend do the entire production?

|  |  |
| --- | --- |
| a. | Cincinnati |
| b. | San Diego |
| c. | St. Paul |
| d. | Atlanta |

ANS: D PTS: 1 DIF: Easy

32. Slather Comics is a distributor for several comic book publishers. They’re looking at opening a new distribution center in Rhode Island. Right now there are four major comic book stores in Rhode Island that distribute Slather supplies. Below, find a table that provides information on the geographic location of the four comic book stores and the weekly demand for comics at those stores.

|  |  |  |  |
| --- | --- | --- | --- |
|  | x | y | Q |
| Providence | 10 | 5 | 1,000 |
| Warwick | 2 | 8 | 4,000 |
| Newport | 5 | 1 | 2,500 |
| Cumberland | 3 | 10 | 1,800 |

Determine the coordinates for the best location of the Slathers distribution center.

|  |  |
| --- | --- |
| a. | x = 4.33, y = 5.22 |
| b. | x = 9.23, y = 6.12 |
| c. | x = 3.86, y = 5.22 |
| d. | x = 3.86, y = 6.18 |

ANS: D PTS: 1 DIF: Medium

33. Foxy Soda Company is deciding to enter what they refer to as the southeast region of the United States. They’re determining where to position a bottling plant to serve six major distribution centers in the southeast region. You’ll find the data for the geographic location of the six distribution centers in the table below along with the weekly number of cases that should be shipped to those distribution centers.

|  |  |  |  |
| --- | --- | --- | --- |
|  | x | y | Q |
| Distribution Center 1 | 90 | 40 | 1,000 |
| Distribution Center 2 | 30 | 25 | 5,000 |
| Distribution Center 3 | 70 | 10 | 3,000 |
| Distribution Center 4 | 50 | 80 | 8,000 |
| Distribution Center 5 | 60 | 60 | 6,000 |
| Distribution Center 6 | 70 | 5 | 3,000 |

What would be the best geographic position for their new bottling plant?

|  |  |
| --- | --- |
| a. | x = 46.54, y = 44.82 |
| b. | x = 64.44, y = 54.62 |
| c. | x = 46.54, y = 54.62 |
| d. | x = 54.62, y = 46.54 |

ANS: D PTS: 1 DIF: Medium

Marlboro College is considering setting up a satellite campus at a suburban location. After an extensive review, they determine that the satellite campus would attract students from three nearby communities. Geographic data for each of the three communities are provided in the table below along with an estimate of the number of student credit hours per year that each of the three communities might provide.

|  |  |  |  |
| --- | --- | --- | --- |
|  | x | y | Q |
| Plymouth | 1,000 | 600 | 16,000 |
| Easton | 300 | 100 | 27,000 |
| Chester | 550 | 380 | 22,500 |

34. What would be the best geographic coordinates to attract students from all three communities?

|  |  |
| --- | --- |
| a. | x = 987.64, y = 582.45 |
| b. | x = 756.22, y = 326.56 |
| c. | x = 556.87, y = 318.32 |
| d. | x = 289.76, y = 182.78 |

ANS: C PTS: 1 DIF: Medium

35. What community would be nearest to the satellite campus?

|  |  |
| --- | --- |
| a. | Plymouth |
| b. | Easton |
| c. | Chester |
| d. | Can not be determined |

ANS: C PTS: 1 DIF: Medium

36. Hula Airline flies from the West Coast to Hawaii. They are planning on expanding the fleet. They are looking at purchasing 20 aircraft from one of the four suppliers—Boeing, Airbus, Bombardier, and Embraer.The data for analysis is presented below.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Criteria | Weight | Boeing | Airbus | Bombardier | Embraer |
| Fuel Efficiency | 95 | 80 | 85 | 90 | 92 |
| Number of Passengers | 82 | 80 | 80 | 70 | 65 |
| Sale Price | 90 | 70 | 65 | 85 | 90 |
| Maintenance Costs | 80 | 75 | 70 | 80 | 70 |
| Training Costs | 35 | 80 | 90 | 60 | 50 |
| Passenger Comfort | 20 | 50 | 80 | 80 | 75 |

Based on these weights, what would be the ranking of selecting aircraft manufacturers—going from best to worst ?

|  |  |
| --- | --- |
| a. | Boeing, Airbus, Bombardier, Embraer |
| b. | Airbus, Bombardier, Embraer, Boeing |
| c. | Bombardier, Embraer, Airbus, Boeing |
| d. | Bombardier, Embraer, Boeing, Airbus |

ANS: C PTS: 1 DIF: Medium

37. Boeing wants to promote a new version of its 737 aircraft. So it’s offering this aircraft at a discount to Hulu airlines. A newer aircraft changes the scores for Boeing in the Hulu aircraft analysis. The newer analysis for Boeing is given below.

|  |  |  |
| --- | --- | --- |
| Criteria | Weight | Boeing |
| Fuel Efficiency | 95 | 90 |
| Number of Passengers | 82 | 90 |
| Sale Price | 90 | 85 |
| Maintenance Costs | 80 | 80 |
| Training Costs | 35 | 90 |
| Passenger Comfort | 20 | 60 |

Given this revision, what would be the new ranking of aircraft preference?

|  |  |
| --- | --- |
| a. | Boeing, Airbus, Bombardier, Embraer |
| b. | Boeing, Bombardier, Embraer, Boeing |
| c. | Bombardier, Embraer, Airbus, Boeing |
| d. | Boeing, Bombardier , Embraer, Airbus |

ANS: D PTS: 1 DIF: Medium

Northampton Technical College is looking to outsource publication of its technical manuals. They are looking at three possible suppliers:Staples, OfficeMax, and Ken’s Stationary. Each requires an annual deposit in order to assure 12 hour turnaround time on any order of technical manuals. Consider this deposit to be the equivalent of a fixed cost. The costing data for each supplier is given below.

|  |  |  |  |
| --- | --- | --- | --- |
|  | Fixed Cost | Variable Cost | Selling Price |
| Staples | $10,000 | $1.75 | $9.95 |
| Office Max | $14,000 | $1.56 | $9.95 |
| Ken's Stationary | $20,000 | $1.49 | $9.95 |

38. What is the breakeven point for Staples?

|  |  |
| --- | --- |
| a. | 976 |
| b. | 1,180 |
| c. | 1,220 |
| d. | 2,230 |

ANS: C PTS: 1 DIF: Easy

39. What is the breakeven point for Office Max?

|  |  |
| --- | --- |
| a. | 1,208 |
| b. | 1,456 |
| c. | 1,534 |
| d. | 1,669 |

ANS: D PTS: 1 DIF: Easy

40. What is the breakeven point for Ken’s Stationary ?

|  |  |
| --- | --- |
| a. | 1,220 |
| b. | 1,669 |
| c. | 2,364 |
| d. | 2,786 |

ANS: C PTS: 1 DIF: Easy

41. If this contract was between Staples and OfficeMax, at what level of sales would the cost be equivalent between the two?

|  |  |
| --- | --- |
| a. | Staples is always superior to Office Max |
| b. | Staples is always inferior to Office Max |
| c. | 21,053 |
| d. | 85,714 |

ANS: C PTS: 1 DIF: Hard

42. If this contract was between OfficeMax and Ken’s Stationary, at what level of sales would the cost be equivalent between the two?

|  |  |
| --- | --- |
| a. | Ken’s Stationary is always inferior to Office Max |
| b. | 2,156 |
| c. | 21,053 |
| d. | 85,714 |

ANS: D PTS: 1 DIF: Hard

Xebec Technologies is planning a major product development. They’re looking to hire a project manager and have limited the list of candidates to four individuals. Xebec has been reviewing the resumes of the individuals and has invited each of the individuals in for an interview with the CEO and evaluation by the technical group that will be working on the project. See their findings in the matrix below.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Criteria | Weight | Karen Lightman | Bernard Boyd | Ellen Chow | Amir Khan |
| Work Experience | 7 | 80 | 100 | 40 | 80 |
| Education | 5 | 75 | 75 | 100 | 90 |
| Group Evaluation Score | 9 | 70 | 40 | 90 | 70 |
| Aptitude Test | 6 | 70 | 60 | 75 | 100 |
| Interview Score | 10 | 100 | 90 | 90 | 75 |
| Life Experiences | 4 | 60 | 40 | 90 | 50 |

43. Based on the assigned weights whom should Xebec select ?

|  |  |
| --- | --- |
| a. | Lightman |
| b. | Boyd |
| c. | Chow |
| d. | Khan |

ANS: C PTS: 1 DIF: Medium

44. Upon reflection Xebec Technologies felt that the criterion of « life experiences » was too subjective. If they eliminated that criteria who would be the prime candidate?

|  |  |
| --- | --- |
| a. | Lightman |
| b. | Boyd |
| c. | Chow |
| d. | Khan |

ANS: D PTS: 1 DIF: Medium

Housman Automotive produces automobile parts for almost all the automobile manufacturers in Europe. They are evaluating closing one or more of the four plants that produce a particular part in Europe. The economic data for the four plants are provided below.

|  |  |  |  |
| --- | --- | --- | --- |
|  | Fixed Cost | Variable Cost | Selling Price |
| Essen | $600,000 | $9.75 | $15.90 |
| Hamberg | $783,000 | $9.20 | $15.90 |
| Warsaw | $550,000 | $10.30 | $15.90 |
| Lyon | $880,000 | $8.50 | $15.90 |

45. Which plant has the lowest breakeven point in terms of the number of units?

|  |  |
| --- | --- |
| a. | Essen |
| b. | Hamberg |
| c. | Warsaw |
| d. | Lyon |

ANS: A PTS: 1 DIF: Medium

46. What was the breakeven point of the Lyon plant?

|  |  |
| --- | --- |
| a. | 96,760 |
| b. | 108,960 |
| c. | 116,866 |
| d. | 118,919 |

ANS: D PTS: 1 DIF: Easy

47. Which of the following statements would be true for comparison between the Essen plant and the Hamberg plant?

|  |  |
| --- | --- |
| a. | The Essen plant is always superior to the Hamberg plant. |
| b. | The Hamberg plant is always superior to the Essen plant. |
| c. | The Essen plant is superior to the Hamberg plant up to a production volume of 332,727 units. |
| d. | The Essen plant is superior to the Hamberg plant up to a production volume of 211,818 units. |

ANS: C PTS: 1 DIF: Hard

48. The following statements would be true for comparison between the Hamberg plant and the Warsaw plant?

|  |  |
| --- | --- |
| a. | The Warsaw plant is always superior to the Hamberg plant. |
| b. | The Hamberg plant is always superior to the Warsaw plant. |
| c. | The Warsaw plant is superior to the Hamberg plant up to a production volume of 211,818 units. |
| d. | The Hamberg plant is superior to the Warsaw plant up to a production volume of 211,818 units. |

ANS: C PTS: 1 DIF: Hard

49. Which of the following statements would be true for comparison between the Warsaw plant and the Lyon plant?

|  |  |
| --- | --- |
| a. | The Lyon is always inferior to the Warsaw plant. |
| b. | The Lyon plant is inferior to the Warsaw plant up to a production volume of 211,818 units. |
| c. | The Lyon plant is inferior to the Warsaw plant up to a production volume of 183,333 units. |
| d. | The Lyon plant is inferior to the Warsaw plant up to a production volume of 138,889 units. |

ANS: C PTS: 1 DIF: Hard

50. Assume that next years demand for this automobile part is 250,000 units. What would be the profits generated at the Essen, Hamberg, Warsaw, and Lyon plants, respectively?

|  |  |
| --- | --- |
| a. | $630,000; $557,000; $570,000; $680,000 |
| b. | $691,000; $624,000; $626,000; $754,000 |
| c. | $937,500; $892,000; $850,000; $970,000 |
| d. | $999,000; $959,000; $906,000; $1,124,000 |

ANS: C PTS: 1 DIF: Medium