**Question 1:** What is operations management? Why is it important? Is a good knowledge of operations management more important in service or manufacturing industries? Explain your answer.

**Question 2:** Discuss the use of PERT/CPM techniques for managing projects. Describe what PERT/CPM does. Discuss advantages and disadvantages of using it. What other techniques might you choose to manage your project?

**Question 3:** What are economies of scale in a manufacturing plant? Do they continue forever? What are diseconomies of scale? How might you decide the optimal size of a plant?

**Question 4:** What, in your opinion, are the three most important issues in supply chain management? Discuss why you think these are the key issues.

**Question 5:** Discuss why (or if) inventories are necessary. What are the benefits of inventories? What are the disadvantages of holding inventories?

**Problem 1**.

Sweats and Sweaters is a small chain of stores specializing in casual cotton clothing. The company currently has five stores in Georgia, South Carolina, and North Carolina, and it wants to open a new store in one of four new mall locations in the Southeast. A consulting firm has been hired to help the company decide where to locate its new store. The company has indicated five factors that are important to its decision, including proximity of a college, community median income, mall vehicle traffic flow and parking, quality and number of stores in the mall, and proximity of other malls or shopping areas. The consulting firm had the company weight the importance of each factor. The consultants visited each potential location and rated them according to each factor, as follows:

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | |  |  | **Scores (0 to 100)** | | | | | **Location Factor** | **Weight** | **Mall 1** | **Mall 2** | **Mall 3** | **Mall 4** | | College proximity | 0.30 | 40 | 60 | 90 | 50 | | Median income | 0.25 | 75 | 80 | 75 | 70 | | Vehicle traffic | 0.25 | 60 | 90 | 79 | 74 | | Mall quality and size | 0.10 | 90 | 100 | 80 | 90 | | Proximity of other shopping | 0.10 | 80 | 30 | 60 | 70 | |

**Answer 1:**

**Problem 2.**

Rowley Apparel, manufacturer of the famous “Race-A-Rama” swimwear line, needs help planning production for next year. Demand for swimwear follows a seasonal pattern, as shown here. Given the following costs and demand forecasts, test these four strategies for meeting demand: (a) level production with overtime and subcontracting, as needed, (b) level production with backorders as needed, (c) chase demand, and (d) 3000 units regular production from April through September and as much regular, overtime, and subcontracting production in the other months as needed to meet annual demand. Determine the cost of each strategy. Which strategy would you recommend?

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
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| |  |  | | --- | --- | | **Month** | **Demand Forecast** | | January | 1000 | | February | 500 | | March | 500 | | April | 2000 | | May | 3000 | | June | 4000 | | July | 5000 | | August | 3000 | | September | 1000 | | October | 500 | | November | 500 | | December | 3000 | |
| |  |  | | --- | --- | | Beginning workforce | 8 workers | | Subcontracting capacity | unlimited | | Overtime capacity | 2000 units/month | | Production rate per worker | 250 units/month | | Regular wage rate | $15 per unit | | Overtime wage rate | $25 per unit | | Subcontracting cost | $30 per unit | | Hiring cost | $100 per worker | | Firing cost | $200 per worker | | Holding cost | $0.50 per unit/month | | Backordering cost | $10 per unit/month | | |

**Answer 2:**

**Problem 3**.

Referring to the product structure diagram for product A, determine:

* How many Ks are needed for each A.
* How many Es are needed for each A.
* the low-level code for item E.



**Answer 3:**

**Problem 4**.

Calculate the reliability of the following system.



**Answer 4:**

**Problem 5**.

Construct a network from the information in the following table and identify all the paths in the network, compute the length of each, and indicate the critical path.

|  |  |  |  |
| --- | --- | --- | --- |
|  |  | | |
| **Activity** | **Activity Predecessor** | **Time (weeks)** |
| 1 | — | 7 |
| 2 | — | 10 |
| 3 | 1 | 6 |
| 4 | 2 | 5 |
| 5 | 2 | 4 |
| 6 | 3, 4 | 3 |
| 7 | 5, 6 | 2 |

**Answer 5:**