

Sheet 2

Review Questions

1. What is manufacturing?
2. What are the three basic industry categories?
3. What is the difference between consumer goods and capital goods?
4. What is the difference between a processing operation and an assembly operation?
5. Name the four categories of part-shaping operations, based on the state of the starting work material.
6. Assembly operations can be classified as permanent joining methods and mechanical assembly. What are the four types of permanent joining methods?
7. What is the difference between hard product variety and soft product variety?
8. What type of production does a job shop perform?
9. Flow line production is associated with which one of the following layout types: (a) cellular layout, (b) fixed-position layout, (c) process layout, or (d) product layout?
10. What is the difference between a single-model production line and a mixed-model production line?
11. What is meant by the term *technological processing capability*?

Problems

1. A plant produces three product lines: A, B, and C. There are 6 models within product line A, 4 models within B, and 8 within C. Average annual production quantities of each A model is 500 units, 700 units for each B model, and 1100 units for each C model. Determine the values of (a) P and (b) Q_f for this plant.
2. The ABC Company is planning a new product line and will build a new plant to manufacture the parts for a new product line. The product line will include 50 different models. Annual production of each model is expected to be 1000 units. Each product will be assembled of 400 components. All processing of parts will be accomplished in one factory. There are an average of 6 processing steps required to produce each component, and each processing step takes 1.0 minute (includes an allowance for setup time and part handling). All processing operations are performed at workstations, each of which includes a production machine and a human worker. If each workstation requires a floor space of 250 ft², and the factory operates one shift (2000 hr/yr), determine (a) how many production operations, (b) how much floor space, and (c) how many workers will be required in the plant.
3. The XYZ Company is planning to introduce a new product line and will build a new factory to produce the parts and assembly the final products for the product line. The new product line will include 100 different models. Annual production of each model is expected to be 1000 units. Each product will be assembled of 600 components. All processing of parts and assembly of products will be accomplished in one factory. There are an average of 10 processing steps required to produce each component, and each processing step takes 30 sec. (includes an allowance for setup time and part handling). Each final unit of product takes 3.0 hours to assemble. All processing operations are performed at work cells that each includes a production machine and a human worker. Products are assembled on single workstations consisting of two workers each. If each work cell and each workstation require 200 ft², and the factory operates one shift (2000 hr/yr), determine: (a) how many production operations, (b) how much floor space, and (c) how many workers will be required in the plant.
4. If the company in Problem 3 were to operate three shifts (6000 hr/yr) instead of one shift, determine the answers to (a), (b), and (c).