

Fundamentals of manufacturing processes

[Business](#), [Industries](#)



The American University in Cairo School of Sciences and Engineering
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Fundamentals of Manufacturing Processes

Overview Review Questions

1. What are the differences between primary, secondary, and tertiary industries? Give an example of each category. Answer.

A primary industry is one that cultivates and exploits natural resources, such as agriculture or mining. A secondary industry takes the outputs of primary industries and converts them to consumer and capital goods. Examples of secondary industries are textiles and electronics. A tertiary industry is in the service sector of the economy. Examples of tertiary industries are banking and education.

2. How are product variety and production quantity related when comparing typical factories? Answer.

Generally production quantity is inversely related to product variety. A factory that produces a large variety of products will produce a smaller quantity of each. A company that produces a single product will produce a large quantity.

3. Define manufacturing capability. Answer. Manufacturing capability refers to the technical and physical limitations of a manufacturing firm and each of its plants.

Three categories of capability include technological processing capability, physical size and weight, and production capacity.

4. How does a shaping process differ from a surface processing operation?

Answer. A shaping process changes the geometry of the work material (machining or forging). A surface processing operation does not alter the geometry, but instead alters the properties and/or appearance of the surface of the work (painting or plating)

5. What is the difference between a process layout and a product layout in a production facility?

Answer.

A process layout is one where the machinery in a plant is arranged based on the type of process it performs.

To produce a product it must visit the departments in the order of the operations that must be performed. This often includes large travel distances within the plant. A process layout is often used when the product variety is large the operation sequences of products are dissimilar. A product layout is one where the machinery is arranged based on the general flow of the products that will be produced. Travel distance is reduced because products will generally flow to the next machine in the sequence. A product layout works well when all products tend to follow the same sequence of production.

Multiple Choice Quiz 1.

Which of the following industries are classified as secondary industries (three correct answers): (a) beverages (b) financial services, (c) fishing, (d) mining, (e) power utilities, (f) publishing, and (g) transportation?

Answer. (a), (e), and (f).

2. Inventions of the Industrial Revolution include which one of the following: (a) automobile, (b) cannon, (c) printing press, (d) steam engine, or (e) sword?

Answer. (d).

3. Do ferrous metals include which of the following (two correct answers): (a) aluminum, (b) cast iron, (c) copper, (d) gold, and (e) steel?

Answer.

(c) and (e).

4. Which one of the following is a machine used to perform extrusion: (a) forge hammer, (b) milling machine, (c) rolling mill, (d) press, (e) torch?

Answer. (d).

5. A production planning and control department accomplish which of the following functions in its role of providing manufacturing support (two best answers): (a) designs and orders machine tools, (b) develops corporate strategic plans, (c) orders materials and purchased parts, (d) performs quality inspections, and (e) schedules the order of products on a machine?

Answer. (c) and (e).