Organizational Theory, Design, and Change, 7e **(Jones)**
Chapter 9 Organizational Design, Competences, and Technology

1) Craftswork is the organizational technology based on competences in using a standardized, progressive assembly process to manufacture goods.
Answer: FALSE
Page Ref: 241
Difficulty: Easy
LO: 9-1

2) Mass production is the technology that involves groups of skilled workers interacting closely and combining their skills to produce custom-designed products.
Answer: FALSE
Page Ref: 241
Difficulty: Easy
LO: 9-1

3) Technology is used at all three stages in the value creation process: input, conversion, and output.
Answer: TRUE
Page Ref: 242
Difficulty: Easy
LO: 9-1

4) An organization taking the technical approach to measure organizational effectiveness uses technology to develop new products, services, and processes.
Answer: FALSE
Page Ref: 243
Difficulty: Easy
LO: 9-1

5) An organization taking the internal systems approach uses technology to reduce the time needed to bring new products to market.
Answer: TRUE
Page Ref: 243
Difficulty: Easy
LO: 9-1

6) Small-batch technology has a higher level of technical complexity than large-batch technology.
Answer: FALSE
Page Ref: 244
Difficulty: Easy
LO: 9-2

7) When conversion processes depend primarily on the performance of people, rather than on machines, technical complexity of the process is said to be high.
Answer: FALSE
Page Ref: 244
Difficulty: Easy
LO: 9-1

8) A conversion process that is fully automated and that can be programmed in advance is considered to be having low technical complexity.
Answer: FALSE
Page Ref: 244
Difficulty: Easy
LO: 9-1

9) Small-batch and unit technology scores highest on the dimension of technical complexity.
Answer: FALSE
Page Ref: 244
Difficulty: Easy
LO: 9-2

10) The conversion process that results from small-batch and unit technology tends to be flexible.
Answer: TRUE
Page Ref: 244
Difficulty: Easy
LO: 9-2

11) In the case of small-batch technology, production continues with little variation in output and rarely stops.
Answer: FALSE
Page Ref: 244
Difficulty: Easy
LO: 9-2

12) Continuous-process technology is typically used for producing one-of-a-kind customized products.
Answer: FALSE
Page Ref: 248
Difficulty: Easy
LO: 9-2

13) Continuous-process production is more cost efficient than both unit and mass production.
Answer: TRUE
Page Ref: 248
Difficulty: Easy
LO: 9-2

14) The most appropriate structure for unit and small-batch technology is an organic structure.
Answer: TRUE
Page Ref: 249
Difficulty: Easy
LO: 9-3

15) Continuous-process technology is associated with the tallest hierarchy of authority.
Answer: TRUE
Page Ref: 249
Difficulty: Easy
LO: 9-3

16) A mechanistic structure is the appropriate structure for managing continuous-process technology.
Answer: FALSE
Page Ref: 249
Difficulty: Easy
LO: 9-3

17) According to Aston Studies, an organization's technology is more important than organizational size in determining the organization's choice of structure.
Answer: FALSE
Page Ref: 250
Difficulty: Moderate
LO: 9-3

18) Task variability is low when a task is highly standardized or repetitious so a worker encounters the same situation time and time again.
Answer: TRUE
Page Ref: 251
Difficulty: Easy
LO: 9-2

19) Routine manufacturing is characterized by high task variability and low task analyzability.
Answer: FALSE
Page Ref: 252
Difficulty: Easy
LO: 9-2

20) The low-cost advantages of mass production are obtained by making tasks low in variability and high in analyzability.
Answer: TRUE
Page Ref: 252
Difficulty: Easy
LO: 9-2

21) Engineering production technology is characterized by low task variability and low task analyzability.
Answer: FALSE
Page Ref: 252
Difficulty: Easy
LO: 9-2

22) Typically, organizations performing routine tasks have flat hierarchy of authority.
Answer: FALSE
Page Ref: 253
Difficulty: Easy
LO: 9-3

23) Typically, organizations performing nonroutine tasks have organic structures.
Answer: TRUE
Page Ref: 253
Difficulty: Easy
LO: 9-3

24) Mediating technology at the organizational level is also found in organizations that use franchise arrangements to organize their businesses.
Answer: TRUE
Page Ref: 257
Difficulty: Easy
LO: 9-2

25) Mass production technology is based on sequential task interdependence.
Answer: TRUE
Page Ref: 258
Difficulty: Easy
LO: 9-2

26) Long-linked technology is characterized by work process in which input, conversion, and output activities can be performed independently of one another.
Answer: FALSE
Page Ref: 258
Difficulty: Easy
LO: 9-2

27) Intensive technology is characterized by a work process where input, conversion, and output activities are inseparable.
Answer: TRUE
Page Ref: 259
Difficulty: Easy
LO: 9-2

28) Intensive technology is less expensive to manage than either mediating or long-linked technology.
Answer: FALSE
Page Ref: 259
Difficulty: Moderate
LO: 9-2

29) Advanced manufacturing technology (AMT) tries to protect the conversion process from disruptions at the input and output stages by using stockpiles of inventory as buffers to increase control and reduce uncertainty.
Answer: FALSE
Page Ref: 263
Difficulty: Moderate
LO: 9-5

30) A just-in-time inventory system increases task interdependence between stages in the production chain.
Answer: TRUE
Page Ref: 265
Difficulty: Easy
LO: 9-5

31) A computer-integrated manufacturing system eliminates the need to retool machines physically.
Answer: TRUE
Page Ref: 266
Difficulty: Easy
LO: 9-2

32) The interactions of the members of a surgical operating team, the cooperative efforts of scientists in a research and development laboratory, and techniques developed by assembly-line workers are all examples of competences and technology at the _____ level.
A) functional
B) external resource
C) environmental
D) organizational
Answer: A
Page Ref: 240,241
Difficulty: Easy
LO: 9-1

33) _____ is the organizational technology that uses conveyor belts and a standardized progressive assembly process to manufacture goods.
A) Craftswork
B) Mass production
C) Customization
D) Differentiated production
Answer: B
Page Ref: 241
Difficulty: Easy
LO: 9-1

34) _____ is the technology that involves groups of skilled workers who interact closely to produce custom-designed products.
A) Mass production
B) Engineering technology
C) Craftswork
D) Progressive manufacturing
Answer: C
Page Ref: 241
Difficulty: Easy
LO: 9-1

35) Ford increased his organization's effectiveness by organizing its functional resources to create better quality cars at a lower cost for both manufacturer and consumer. This information indicates that Ford is taking the _____ approach to measure organizational effectiveness.
A) environmental
B) internal systems
C) competitive
D) technical
Answer: D
Page Ref: 243
Difficulty: Easy
LO: 9-1

36) A company uses new technological developments to improve its service to customers and to increase products' quality and reliability. This information indicates that the company is taking the _____ approach to measure organizational effectiveness.
A) external resource
B) technical
C) internal systems
D) competitive
Answer: A
Page Ref: 243
Difficulty: Easy
LO: 9-1

37) An organization that uses the internal systems approach to measure organizational effectiveness will most likely employ technology to _____.
A) reduce costs
B) improve quality
C) improve customer service
D) reduce product development time
Answer: D
Page Ref: 243
Difficulty: Easy
LO: 9-1

38) Organizations that employ _____ technology make one-of-a-kind customized products.
A) sequential-process
B) small-batch and unit
C) continuous-process
D) large-batch and mass production
Answer: B
Page Ref: 244
Difficulty: Easy
LO: 9-2

39) Which of the following statements is most likely to be true regarding a process that has a high technical complexity?
A) Such processes rely more on human skills and less on machines.
B) In such a process, work activities cannot be programmed in advance.
C) Outputs that result from such processes can be predicted accurately.
D) Such processes are very costly and they cannot be changed once established.
Answer: C
Page Ref: 244
Difficulty: Moderate
LO: 9-2

40) According to Joan Woodward, the _____ of a production process is a measure of the extent to which a production process can be programmed so that it can be controlled and made predictable.
A) technical complexity
B) resource customizability
C) situational adaptability
D) environmental compatibility
Answer: A
Page Ref: 244
Difficulty: Easy
LO: 9-2

41) Which of the following types of production technologies, as identified by Joan Woodward, scores lowest on the dimension of technical complexity?
A) continuous-process technology
B) large-batch and mass production technology
C) small-batch and unit technology
D) sequential-process technology
Answer: C
Page Ref: 244
Difficulty: Easy
LO: 9-2

42) A furniture maker that constructs furniture customized to the needs and tastes of specific clients is most likely to use _____ technology.
A) mass production
B) small-batch and unit
C) standardized production
D) continuous-process
Answer: B
Page Ref: 244
Difficulty: Easy
LO: 9-2

43) Which of the following statements is true regarding small-batch and unit technology?
A) The conversion process that results from this technology is typically flexible.
B) This technology is used by companies to produce massive volumes of standardized products.
C) This technology is characterized by highest level of technical complexity.
D) This technology is used in the production of oil-products and chemicals.
Answer: A
Page Ref: 244
Difficulty: Moderate
LO: 9-2

44) With reference to the types of production technologies identified by Joan Woodward, which of the following technologies gives an organization the capacity to produce a wide range of products that can be customized for individual customers?
A) continuous-process technology
B) mass production technology
C) small-batch technology
D) sequential-process technology
Answer: C
Page Ref: 244
Difficulty: Easy
LO: 9-2

45) Small-batch technology is typically characterized by _____.
A) high technical complexity
B) flexibility
C) low costs
D) the ability to be programmed
Answer: B
Page Ref: 245
Difficulty: Easy
LO: 9-2

46) With reference to the types of production technologies identified by Joan Woodward, which of the following technologies is the most suitable to producing new or complex products?
A) sequential-process technology
B) small-batch technology
C) continuous-process technology
D) mass production
Answer: B
Page Ref: 245
Difficulty: Easy
LO: 9-2

47) With reference to the types of production technologies identified by Joan Woodward, which of the following technologies is most likely to be used by an Internet software company?
A) small-batch technology
B) mass production technology
C) sequential-process technology
D) continuous-process technology
Answer: A
Page Ref: 246
Difficulty: Easy
LO: 9-2

48) Which of the following technologies is most likely to be used for producing huge volumes of standardized products, such as cars, razor blades, aluminum cans, and soft drinks?
A) sequential-process technology
B) large-batch technology
C) continuous-process technology
D) small-batch technology
Answer: B
Page Ref: 247
Difficulty: Easy
LO: 9-2

49) Which of the following statements is true regarding large-batch and mass production technology?
A) This technology has the lowest level of technical complexity.
B) In the case of this technology, any machines used during the conversion process are less important than people's skills and knowledge.
C) This technology is typically used for producing customized products in small quantities.
D) This technology allows tasks to be specified and programmed in advance.
Answer: D
Page Ref: 247
Difficulty: Moderate
LO: 9-2

50) With reference to the types of production technologies identified by Joan Woodward, which of the following technologies, when operated at full capacity, has the lowest production costs?
A) sequential-process
B) small-batch
C) continuous-process
D) mass production
Answer: C
Page Ref: 248
Difficulty: Easy
LO: 9-2

51) With reference to the types of production technologies identified by Joan Woodward, which of the following technologies is most likely to be used by an oil refinery?
A) small-batch technology
B) continuous-process technology
C) mass production technology
D) intensive technology
Answer: B
Page Ref: 248
Difficulty: Moderate
LO: 9-5

52) With reference to the types of production technologies identified by Joan Woodward, which of the following technologies has the highest level of technical complexity?
A) small-batch technology
B) sequential-process technology
C) mass production technology
D) continuous-process technology
Answer: D
Page Ref: 248
Difficulty: Easy
LO: 9-2

53) According to Woodward's research, an organization using which of the following technologies is most likely to have the flattest organizational structure?
A) small-batch technology
B) sequential-process technology
C) large-batch technology
D) continuous-process technology
Answer: A
Page Ref: 249
Difficulty: Easy
LO: 9-3

54) According to Joan Woodward's research, organization using which of the following technologies is most likely to have the tallest hierarchy of authority?
A) small-batch technology
B) mass production technology
C) continuous-process technology
D) sequential-process technology
Answer: C
Page Ref: 249
Difficulty: Easy
LO: 9-3

55) With reference to the types of production technologies identified by Joan Woodward, a mechanistic structure is most appropriate for an organization using _____ technology.
A) mass production
B) small-batch
C) intensive
D) continuous-process
Answer: A
Page Ref: 249
Difficulty: Easy
LO: 9-3

56) The argument that technology determines structure is known as the _____.
A) transaction cost imperative
B) resource dependency
C) technological imperative
D) external dependency
Answer: C
Page Ref: 250
Difficulty: Easy
LO: 9-3

57) The Aston Studies concluded that _____ in determining an organization's choice of structure.
A) external environment of the organization is more important than organizational size
B) organizational size is more important than technology
C) organizational culture is more important than organizational size
D) organizational technology is more important than organizational culture
Answer: B
Page Ref: 250
Difficulty: Easy
LO: 9-3

58) According to Woodward's research, which of the following is a main factor that determines the design of organizational structure?
A) technology
B) size of the organization
C) organizational culture
D) external environment of the organization
Answer: A
Page Ref: 250
Difficulty: Easy
LO: 9-2

59) According to Charles Perrow, which of the following dimensions underlie the difference between routine and nonroutine or complex tasks?
A) task variability and task interdependence
B) task variability and task analyzability
C) task analyzability and technical complexity
D) task interdependence and task analyzability
Answer: B
Page Ref: 251
Difficulty: Easy
LO: 9-2

60) According to Charles Perrow, task _____ is the number of new or unexpected situations that a person encounters while performing a task.
A) variability
B) analyzability
C) customizability
D) adaptability
Answer: A
Page Ref: 251
Difficulty: Easy
LO: 9-2

61) According to Charles Perrow, task analyzability is the _____.
A) number of exceptions encountered while performing a task
B) degree to which the actions of one person affect another person's ability to perform his or her tasks
C) maximum number of tasks a worker is assigned
D) degree to which search activity is needed to solve a problem
Answer: D
Page Ref: 251
Difficulty: Moderate
LO: 9-2

62) Which of the following technologies has high task variability and high task analyzability?
A) routine manufacturing
B) craftswork
C) engineering production
D) nonroutine research
Answer: C
Page Ref: 252
Difficulty: Easy
LO: 9-2

63) Which of the following technologies has low task variability and high task analyzability?
A) routine manufacturing
B) craftswork
C) engineering production
D) nonroutine research
Answer: A
Page Ref: 252
Difficulty: Easy
LO: 9-2

64) Which of the following technologies has low task variability and low task analyzability?
A) routine manufacturing
B) craftswork
C) engineering production
D) nonroutine research
Answer: B
Page Ref: 252
Difficulty: Easy
LO: 9-2

65) Nonroutine research is characterized by _____.
A) high task variability and high task analyzability
B) low task variability and low task analyzability
C) low task variability and high task analyzability
D) high task variability and low task analyzability
Answer: D
Page Ref: 252
Difficulty: Moderate
LO: 9-2

66) The manufacture of specialized or customized products like furniture, clothing are examples of _____.
A) routine manufacturing
B) craftswork
C) engineering production
D) nonroutine research
Answer: B
Page Ref: 252
Difficulty: Easy
LO: 9-2

67) According to Perrow an organization that performs routine tasks will have a _____.
A) flat hierarchy of authority
B) decentralized decision-making authority
C) mechanistic structure
D) low degree of standardization
Answer: C
Page Ref: 253
Difficulty: Moderate
LO: 9-3

68) According to Perrow an organization that performs nonroutine tasks will have a(n) _____.
A) mechanistic structure
B) flat hierarchy of authority
C) centralized decision-making authority
D) high degree of formalization
Answer: B
Page Ref: 253
Difficulty: Moderate
LO: 9-3

69) With reference to the Perrow's model, in an organization, which of the following departments is most likely to have an organic structure?
A) manufacturing
B) sales
C) accounting
D) R&D
Answer: D
Page Ref: 255
Difficulty: Easy
LO: 9-3

70) Mediating technology is based on _____ task interdependence.
A) pooled
B) sequential
C) reciprocal
D) intensive
Answer: A
Page Ref: 256
Difficulty: Easy
LO: 9-2

71) Which of the following technologies identified by Thompson is characterized by a work process in which input, conversion, and output activities can be performed independently of one another?
A) mediating technology
B) operations technology
C) long-linked technology
D) intensive technology
Answer: A
Page Ref: 256
Difficulty: Easy
LO: 9-2

72) Which of the following strategies is most likely to be used by an organization using mediating technology for reducing uncertainty?
A) creating slack resources
B) using vertical integration
C) increasing the number of customers served
D) producing only a narrow range of outputs
Answer: C
Page Ref: 256
Difficulty: Moderate
LO: 9-2

73) An organization using which of the following technologies, as identified by Thompson, is most likely to use vertical integration as a strategy for reducing uncertainty?
A) mediating technology
B) long-linked technology
C) sequential-process technology
D) intensive technology
Answer: B
Page Ref: 256
Difficulty: Easy
LO: 9-2

74) Each of the Walmart stores operates essentially independently. The performance of one store does not affect another store, but together all stores determine the performance of the whole organization. According to this information, which of the following technologies, as identified by Thompson, is being used by Walmart?
A) mediating technology
B) sequential-process technology
C) long-linked technology
D) intensive technology
Answer: A
Page Ref: 257
Difficulty: Easy
LO: 9-2

75) Long-linked technology is based on _____ task interdependence.
A) pooled
B) sequential
C) reciprocal
D) intensive
Answer: B
Page Ref: 258
Difficulty: Easy
LO: 9-2

76) A manufacturing company stockpiles inputs and holds inventories of component parts so the conversion process is not disrupted if there is a problem with suppliers. It also stockpile finished products so it can respond quickly to an increase in customer demand without changing its established conversion processes. Which of the following technologies, as identified by Thompson, is most likely being used by this company?
A) small-batch technology
B) long-linked technology
C) intensive technology
D) mediating technology
Answer: B
Page Ref: 258
Difficulty: Moderate
LO: 9-2

77) Which of the following technologies as identified by Thompson, is based on a work process where input, conversion, and output activities must be performed in series?
A) mediating technology
B) small-batch technology
C) long-linked technology
D) intensive technology
Answer: C
Page Ref: 258
Difficulty: Easy
LO: 9-2

78) Which of the following statements is true regarding long-linked technology?
A) Employees working according to long-linked technology become highly skilled as they have to perform a wide range of tasks.
B) Long-linked technology is characterized by routine tasks.
C) Long-linked technology is based on pooled task interdependence.
D) Long-linked technology requires less direct coordination than mediating technology.
Answer: B
Page Ref: 258
Difficulty: Moderate
LO: 9-2

79) With reference to the types of technologies as identified by Thompson, hospitals are organizations that use _____ technology.
A) intensive
B) mediating
C) long-linked
D) continuous-process
Answer: A
Page Ref: 259
Difficulty: Easy
LO: 9-2

80) Intensive technology is based on _____ task interdependence.
A) random
B) pooled
C) sequential
D) reciprocal
Answer: D
Page Ref: 259
Difficulty: Easy
LO: 9-2

81) Which of the following departments in an organization is most likely to use intensive technology?
A) sales
B) manufacturing
C) R&D
D) accounting
Answer: C
Page Ref: 259
Difficulty: Easy
LO: 9-2

82) Which of the following statements is true regarding intensive technology?
A) Intensive technology is less expensive to manage than either mediating or long-linked technology.
B) Intensive technology is based on pooled task interdependence.
C) In an organization using intensive technology, activities of all people and all departments fully depend on one another.
D) Typically, organizations using intensive technology create slack resources to reduce uncertainty.
Answer: C
Page Ref: 259
Difficulty: Moderate
LO: 9-2

83) As identified by Thompson, _____ technology is characterized by a work process where input, conversion, and output activities are inseparable.
A) intensive
B) continuous-process
C) mediating
D) long-linked
Answer: A
Page Ref: 259
Difficulty: Easy
LO: 9-2

84) Which of the following organizational structures is most likely to be used by an organization that uses intensive technology?
A) functional structure
B) geographic structure
C) product team structure
D) market structure
Answer: C
Page Ref: 259
Difficulty: Easy
LO: 9-3

85) Which of the following strategies is most likely to be used by an organization using intensive technologies to reduce uncertainty and the costs associated with intensive technology?
A) creating slack resources
B) increasing the number of customers served
C) producing only a narrow range of outputs
D) using vertical integration
Answer: C
Page Ref: 261
Difficulty: Moderate
LO: 9-2

86) A pharmaceutical company concentrates on producing drugs for diabetes patients. This company is pursuing a strategy of _____.
A) specialism
B) licensing
C) outsourcing
D) vertical integration
Answer: A
Page Ref: 261
Difficulty: Easy
LO: 9-2

87) Dedicated machines _____.
A) are ideal for short production runs
B) produce a narrow range of products
C) are very expensive to operate
D) require high-skilled operators
Answer: B
Page Ref: 261,262
Difficulty: Easy
LO: 9-5

88) Which of the following is a typical characteristic of traditional mass production?
A) sequential task interdependence
B) low technical complexity
C) nonroutine nature of production tasks
D) rotation of workers among multiple tasks
Answer: A
Page Ref: 263
Difficulty: Moderate
LO: 9-5

89) Which of the following statements is true regarding an organization that uses fixed automation?
A) The organization will have to train its employees so that they can perform multiple tasks skillfully.
B) The organization generally performs nonroutine tasks.
C) The organization uses highly complex machines that can perform a wide range of tasks.
D) The organization finds it difficult to quickly respond to changing customer needs.
Answer: D
Page Ref: 263
Difficulty: Hard
LO: 9-5

90) Which of the following technologies electronically links an organization with its suppliers?
A) CAD
B) CAMM
C) Fixed automation
D) CIM
Answer: B
Page Ref: 264
Difficulty: Moderate
LO: 9-5

91) Which of the following statements is true regarding computer-aided design (CAD)?
A) It makes it possible for an organization to develop a new component and produce it by pressing a button.
B) It increases the costs of product designing.
C) It decreases the ability of an organization to customize products to satisfy particular customers.
D) It helps an organization receive supplies exactly at the time they are needed.
Answer: A
Page Ref: 264
Difficulty: Moderate
LO: 9-5

92) Which of the following technologies simplifies the process of developing prototypes?
A) CAD
B) CAMM
C) JIT inventory systems
D) CIM
Answer: A
Page Ref: 264
Difficulty: Easy
LO: 9-5

93) Lee jeans meets customer demand by sending computer requests from stores to the manufacturing departments as jeans sell out in stores. Lee's manufacturing department then pulls in raw materials, such as cloth and thread, from suppliers as it needs them. This information indicates that Lee uses _____.
A) traditional mass production
B) computer-aided designing (CAD)
C) six sigma strategy for managing quality of the products
D) computer-aided-materials management (CAMM)
Answer: D
Page Ref: 264
Difficulty: Moderate
LO: 9-5

94) Which of the following technologies is used to develop master production schedules for manufacturing?
A) CAD
B) CAMM
C) JIT inventory system
D) CIM
Answer: B
Page Ref: 264
Difficulty: Easy
LO: 9-5

95) Computer-aided materials management (CAMM) _____.
A) uses a push approach to manage inventory flows
B) increases the costs of carrying inventory
C) increases task interdependence
D) increases the cost of designing a product
Answer: C
Page Ref: 264, 265
Difficulty: Moderate
LO: 9-5

96) Which of the following advanced manufacturing techniques is developed from the Japanese *kanban* system?
A) fixed automation system
B) computer-aided design system
C) just-in-time inventory system
D) computer-integrated manufacturing system
Answer: C
Page Ref: 265
Difficulty: Easy
LO: 9-5

97) A just-in-time (JIT) inventory system _____.
A) decreases technical complexity
B) requires the use of CAMM for working effectively
C) makes it difficult for an organization to respond quickly to the changing customer preferences
D) decreases task interdependence
Answer: B
Page Ref: 265
Difficulty: Moderate
LO: 9-5

98) Which of the following techniques controls the changeover from one operation to another by means of the commands given to the machines through computer software and eliminates the need to retool machines physically?
A) computer-integrated manufacturing (CIM)
B) computer-aided materials management (CAMM)
C) computer-aided design (CAD)
D) JIT inventory systems
Answer: A
Page Ref: 266
Difficulty: Easy
LO: 9-5

99) The use of robots is integral to _____.
A) CAD
B) CAMM
C) JIT inventory systems
D) CIM
Answer: D
Page Ref: 266
Difficulty: Easy
LO: 9-5

100) What is technology?
Answer: Technology is the combination of skills, knowledge, abilities, techniques, materials, machines, computers, tools, and other equipment that people use to convert or change raw materials, problems, and new ideas into valuable goods and services.
Page Ref: 240
Difficulty: Easy
LO: 9-1

101) Explain the characteristics of small-batch technology as described by Joan Woodward.
Answer: Joan Woodward identified three types of production technologies based on the level of technical complexity. Small-batch technology is one of these three technologies. Small-batch and unit technology scores lowest on the dimension of technical complexity because any machines used during the conversion process are less important than people's skills and knowledge. People decide how and when to use machines, and the production operating process reflects their decisions about how to apply their knowledge. With small-batch and unit technology, the conversion process is flexible because the worker adapts techniques to suit the needs and requirements of individual customers. The flexibility of small-batch technology gives an organization the capacity to produce a wide range of products that can be customized for individual customers. For example, high-fashion designers and makers of products like fine perfume, custom-built cars, and specialized furniture use small-batch technology.
Page Ref: 244
Difficulty: Moderate
LO: 9-2

102) Explain the characteristics of continuous-process technology as described by Joan Woodward.
Answer: Joan Woodward identified three types of production technologies based on the level of technical complexity. Out of these three types of production technologies, continuous process technology is characterized by the highest level of technical complexity.

In continuous-process production, the conversion process is almost entirely automated and mechanized; employees generally are not directly involved. The task of employees engaged in continuous-process production is primarily to manage exceptions in the work process, such as a machine breakdown or malfunctioning equipment. The hallmark of continuous-process technology is the smoothness of its operation. Production continues with little variation in output and rarely stops.

Continuous-process production tends to be more technically efficient than mass production because it is more mechanized and automated and thus is more predictable and easier to control. It is more cost efficient than both unit and mass production because labor costs are such a small proportion of its overall cost. When operated at full capacity, continuous-process technology has the lowest production costs.

Organizations that employ continuous-process technology include companies that make oil-based products and chemicals, such as Exxon, DuPont, and Dow, and brewing companies, such as Anheuser-Busch and Miller Brewing.
Page Ref: 248
Difficulty: Moderate
LO: 9-2

103) According to Joan Woodward, how does technical complexity affect the structure of an organization?
Answer: One of Woodward's goals in classifying technologies according to their technical complexity was to discover whether an organization's technology affected the design of its structure. On the basis of her findings, Woodward argued that each technology is associated with a different structure because each technology presents different control and coordination problems. Organizations with small-batch technology typically have three levels in their hierarchy; organizations with mass production technology, four levels; and organizations with continuous-process technology, six levels. As technical complexity increases, organizations become taller, and the span of control of the CEO widens. The span of control of first-line supervisors first expands and then narrows. It is relatively small with small-batch technology, widens greatly with mass production technology, and contracts dramatically with continuous-process technology.

The main coordination problem associated with small-batch technology is the impossibility of programming conversion activities because production depends on the skills and experience of people working together. The most appropriate structure for unit and small-batch technology is an organic structure in which managers and employees work closely to coordinate their activities to meet changing work demands, which is a relatively flat structure.

In an organization that uses mass production technology, the ability to program tasks in advance allows the organization to standardize the manufacturing process and make it predictable. A mechanistic structure becomes the appropriate structure to control work activities in a mass production setting, and the organizational structure becomes taller and wider.

In an organization that uses continuous-process technology, tasks can be programmed in advance and the work process is predictable and controllable in a technical sense, but there is still the potential for a major systems breakdown. An organic structure is the appropriate structure for managing continuous-process technology because the potential for unpredictable events requires the capability to provide quick, flexible responses.
Page Ref: 248, 249
Difficulty: Moderate
LO: 9-3

104) Define task variability and task analyzability.
Answer: Task variability is the number of exceptions—new or unexpected situations—that a person encounters while performing a task. Task variability is high when a person can expect to encounter many new situations or problems when performing his or her task. Task variability is low when a task is highly standardized or repetitious so a worker encounters the same situation time and time again.

Task analyzability is the degree to which search and information-gathering activity is required to solve a problem. The more analyzable a task, the less search activity is needed; such tasks are routine because the information and procedures needed to complete it have been discovered, rules have been worked out and formalized, and the way to perform a task can be programmed in advance. Tasks are hard to analyze when they cannot be programmed—that is, when procedures for carrying them out and dealing with exceptions cannot be worked out in advance.
Page Ref: 251
Difficulty: Easy
LO: 9-2

105) What are the four types of technologies identified by Perrow on the basis of task variability and task analyzability?
Answer: The four types of technologies identified by Perrow on the basis of task variability and task analyzability are:
1. Routine manufacturing: Routine manufacturing is characterized by low task variability and high task analyzability. Few exceptions are encountered in the work process, and when an exception does occur, little search behavior is required to deal with it. Mass production is representative of routine technology.
2. Craftswork: With craft technology, task variability is low (only a narrow range of exceptions is encountered), and task analyzability is also low (a high level of search activity is needed to find a solution to problems). Employees in an organization using this kind of technology need to adapt existing procedures to new situations and find new techniques to handle existing problems more effectively.
3. Engineering production: With engineering production technology, task variability is high and task analyzability is high. The number or variety of exceptions that workers may encounter in the task is high, but finding a solution is relatively easy because well-understood standard procedures have been established to handle the exceptions.
4. Nonroutine research technology: Nonroutine research technology is characterized by high task variability and low task analyzability and is the most complex and least routine of the four technologies in Perrow's classification. Tasks are complex because not only is the number of unexpected situations large, but search activity is high. Each new situation creates a need to expend resources to deal with it.
Page Ref: 252
Difficulty: Moderate
LO: 9-2

106) Explain the characteristics of mediating technology as described by Thompson.
Answer: Mediating technology is characterized by a work process in which input, conversion, and output activities can be performed independently of one another. Mediating technology is based on pooled task interdependence. One common strategy for improving organizational performance for an organization operating a mediating technology is to obtain more business from existing customers and attract new customers by increasing the number of products it offers. Mediating technology is relatively inexpensive to operate and manage. Costs are low because organizational activities are controlled by standardization. Bureaucratic rules are used to specify how the activities of different departments should be coordinated, and SOPs control the way a department operates to ensure its activities are compatible with those of other departments.
Page Ref: 256, 257
Difficulty: Moderate
LO: 9-2

107) Explain the characteristics of intensive technology as described by Thompson.
Answer: Intensive technology is characterized by a work process where input, conversion, and output activities are inseparable. Intensive technology is based on reciprocal task interdependence, which means that the activities of all people and all departments fully depend on one another. The difficulty of specifying the sequencing of tasks that is characteristic of intensive technology makes necessary a high degree of coordination and makes intensive technology more expensive to manage than either mediating or long-linked technology. Mutual adjustment replaces programming and standardization as the principal method of coordination. Product team and matrix structures are suited to operating intensive technologies because they provide the coordination and the decentralized control that allow departments to cooperate to solve problems. One of the strategies that an organization can pursue to reduce the costs associated with intensive technology is specialism, producing only a narrow range of outputs. A hospital is an example of an organization that operates an intensive technology.
Page Ref: 259, 260
Difficulty: Moderate
LO: 9-2

108) Describe the advantages of using a just-in-time inventory system.
Answer: Just-in-time inventory (JIT) system is an advanced manufacturing technique for managing the flow of inputs into the organization is the just-in-time inventory system. Developed from the Japanese kanban system (a kanban is a card), a just-in-time inventory (JIT) system requires inputs and components needed for production to be delivered to the conversion process just as they are needed, neither earlier nor later, so input inventories can be kept to a minimum.

A JIT system increases task interdependence between stages in the production chain. Traditional mass production draws a boundary between the conversion stage and the input and output stages and sequences conversion activities only. JIT systems break down these barriers and make the whole value-creation process a single chain of sequential activities. Because organizational activities become a continuous process, technical complexity increases, in turn increasing the efficiency of the system.

JIT systems bring flexibility to manufacturing. The ability to order components as they are needed allows an organization to widen the range of products it makes and to customize products.
Page Ref: 265, 266
Difficulty: Moderate
LO: 9-5

109) Explain the advantages of the computer-integrated manufacturing (CIM) technique.
Answer: In flexible manufacturing systems, the key factor that prevents the cost increases associated with changing operations is the use of a computer-controlled system to manage operations. Computer-integrated manufacturing (CIM) is an advanced manufacturing technique that controls the changeover from one operation to another by means of the commands given to the machines through computer software. A CIM system eliminates the need to retool machines physically. Within the system are a number of computer-controlled machines, each capable of automatically producing a range of components. They are controlled by a master computer, which schedules the movement of parts between machines in order to assemble different products from the various components that each machine makes.
Page Ref: 266,267
Difficulty: Easy
LO: 9-5