**Chapter 9 Supplement: Tools for Analyzing, Designing, and Selecting Processes and Layouts**

**Test Bank**

**Multiple Choice**

1. \_\_\_\_\_\_ is one of the simplest tools used to compare and select processes.

a. Cost-volume analysis

b. Value stream mapping

c. Assembly charts

d. Process simulation

Ans: A

Cognitive Domain: Knowledge (Remember)

Learning Objective: 9s-1. Employ tools for process selection, analysis, and design.

Answer Location: Tools for Process Selection

Difficulty Level: Medium

AACSB: Systems and processes in organizations, including planning and design, production/operations, supply chains, marketing, and distribution

2. \_\_\_\_\_\_\_\_ are the intersection of two lines on a breakeven analysis graph that show the point at which the total cost of two processes are identical.

a. Points of difference

b. Points of indifference

c. Points of correlation

d. Points of contact

Ans: B

Cognitive Domain: Knowledge (Remember)

Learning Objective: 9s-1. Employ tools for process selection, analysis, and design.

Answer Location: Tools for Process Selection

Difficulty Level: Medium

AACSB: Systems and processes in organizations, including planning and design, production/operations, supply chains, marketing, and distribution

3. ABC Corporation would like to evaluate three production processes (A, B, and C) to accommodate the changes in demand for its products. The fixed and variable cost per unit are tabled here. Determine the most cost-effective process for an expected annual production volume of 2,000 units.

|  |  |  |
| --- | --- | --- |
| *Process* | *Fixed Cost* | *Variable Cost per Unit* |
| A | $30,000 | $40 |
| B | $40,000 | $30 |
| C | $80,000 | $20 |

a. Process A

b. Process B

c. Process C

d. cannot be determined

Ans: B

Cognitive Domain: Analysis (Analyze)

Learning Objective: 9s-1. Employ tools for process selection, analysis, and design.

Answer Location: Tools for Process Selection

Difficulty Level: Easy

AACSB: Analytical thinking (able to analyze and frame problems)

4. ABC Corporation would like to evaluate three production processes (A, B, and C) to accommodate the changes in demand for its products. The fixed and variable cost per unit are tabled here. Determine the production volume at which costs of Processes A and B are equal.

|  |  |  |
| --- | --- | --- |
| *Process* | *Fixed Cost* | *Variable Cost per Unit* |
| A | $30,000 | $40 |
| B | $40,000 | $30 |
| C | $80,000 | $20 |

a. 2,000

b. 3,000

c. 4,000

d. 1,000

Ans: D

Cognitive Domain: Analysis (Analyze)

Learning Objective: 9s-1. Employ tools for process selection, analysis, and design.

Answer Location: Tools for Process Selection

Difficulty Level: Medium

AACSB: Analytical thinking (able to analyze and frame problems)

5. ABC Corporation would like to evaluate three production processes (A, B, and C) to accommodate the changes in demand for its products. The fixed and variable cost per unit are tabled here. Determine the production volume at which costs of Processes B and C are equal.

|  |  |  |
| --- | --- | --- |
| *Process* | *Fixed Cost* | *Variable Cost per Unit* |
| A | $30,000 | $40 |
| B | $40,000 | $30 |
| C | $80,000 | $20 |

a. 2,000

b. 3,000

c. 4,000

d. 1,000

Ans: C

Cognitive Domain: Analysis (Analyze)

Learning Objective: 9s-1. Employ tools for process selection, analysis, and design.

Answer Location: Tools for Process Selection

Difficulty Level: Medium

AACSB: Analytical thinking (able to analyze and frame problems)

6. ABC Corporation would like to evaluate three production processes (A, B, and C) to accommodate the changes in demand for its products. The fixed and variable cost per unit are tabled here. Determine the process to be selected when the production volume is 3,000 units.

|  |  |  |
| --- | --- | --- |
| *Process* | *Fixed Cost* | *Variable Cost per Unit* |
| A | $30,000 | $40 |
| B | $40,000 | $30 |
| C | $80,000 | $20 |

a. Process A

b. Process B

c. Process C

d. cannot be determined

Ans: B

Cognitive Domain: Analysis (Analyze)

Learning Objective: 9s-1. Employ tools for process selection, analysis, and design.

Answer Location: Tools for Process Selection

Difficulty Level: Medium

AACSB: Analytical thinking (able to analyze and frame problems)

7. ABC Corporation would like to evaluate three production processes (A, B, and C) to accommodate the changes in demand for its products. The fixed and variable cost per unit are tabled here. Determine the process to be selected when the production volume is 6,000 units.

|  |  |  |
| --- | --- | --- |
| Process | Fixed Cost | Variable Cost per Unit |
| A | $30,000 | $40 |
| B | $40,000 | $30 |
| C | $80,000 | $20 |

a. Process A

b. Process B

c. Process C

d. cannot be determined

Ans: C

Cognitive Domain: Analysis (Analyze)

Learning Objective: 9s-1. Employ tools for process selection, analysis, and design.

Answer Location: Tools for Process Selection

Difficulty Level: Medium

AACSB: Analytical thinking (able to analyze and frame problems)

8. ABC Corporation would like to evaluate three production processes (A, B, and C) to accommodate the changes in demand for its products. The fixed and variable cost per unit are tabled here. Determine the process to be selected when the production volume is 500 units.

|  |  |  |
| --- | --- | --- |
| *Process* | *Fixed Cost* | *Variable Cost per Unit* |
| A | $30,000 | $40 |
| B | $40,000 | $30 |
| C | $80,000 | $20 |

a. Process A

b. Process B

c. Process C

d. cannot be determined

Ans: A

Cognitive Domain: Analysis (Analyze)

Learning Objective: 9s-1. Employ tools for process selection, analysis, and design.

Answer Location: Tools for Process Selection

Difficulty Level: Medium

AACSB: Analytical thinking (able to analyze and frame problems)

9. Which of the following is one of the tools used for analyzing and designing processes?

a. breakeven analysis

b. cost analysis

c. volume analysis

d. assembly drawing

Ans: D

Cognitive Domain: Knowledge (Remember)

Learning Objective: 9s-1. Employ tools for process selection, analysis, and design.

Answer Location: Tools for Process Analysis and Design

Difficulty Level: Easy

AACSB: Systems and processes in organizations, including planning and design, production/operations, supply chains, marketing, and distribution

10. \_\_\_\_\_\_ is an enlarged view of a product that shows all of its parts and subassemblies, providing complete information for the manufacture or assembly of a product or structure.

a. An assembly chart

b. An assembly drawing

c. A route sheet

d. A process map

Ans: B

Cognitive Domain: Knowledge (Remember)

Learning Objective: 9s-1. Employ tools for process selection, analysis, and design.

Answer Location: Tools for Process Analysis and Design

Difficulty Level: Easy

AACSB: Systems and processes in organizations, including planning and design, production/operations, supply chains, marketing, and distribution

11. \_\_\_\_\_\_ are often referred to as working drawings.

a. Assembly charts

b. Assembly drawings

c. Job floor drawings

d. Process maps

Ans: B

Cognitive Domain: Knowledge (Remember)

Learning Objective: 9s-1. Employ tools for process selection, analysis, and design.

Answer Location: Tools for Process Analysis and Design

Difficulty Level: Medium

AACSB: Systems and processes in organizations, including planning and design, production/operations, supply chains, marketing, and distribution

12. \_\_\_\_\_\_ maps how a product’s parts go together and the order in which they are assembled.

a. An assembly chart

b. An assembly drawing

c. A route sheet

d. A process map

Ans: A

Cognitive Domain: Knowledge (Remember)

Learning Objective: 9s-1. Employ tools for process selection, analysis, and design.

Answer Location: Tools for Process Analysis and Design

Difficulty Level: Medium

AACSB: Systems and processes in organizations, including planning and design, production/operations, supply chains, marketing, and distribution

13. \_\_\_\_\_\_ are sometimes called *gozinto* charts.

a. Assembly charts

b. Assembly drawings

c. Route sheets

d. Process charts

Ans: A

Cognitive Domain: Knowledge (Remember)

Learning Objective: 9s-1. Employ tools for process selection, analysis, and design.

Answer Location: Tools for Process Analysis and Design

Difficulty Level: Medium

AACSB: Systems and processes in organizations, including planning and design, production/operations, supply chains, marketing, and distribution

14. \_\_\_\_\_\_ is a document that describes the sequence of different operations, places, or people involved in a process.

a. An assembly chart

b. An assembly drawing

c. A route sheet

d. A process chart

Ans: C

Cognitive Domain: Knowledge (Remember)

Learning Objective: 9s-1. Employ tools for process selection, analysis, and design.

Answer Location: Tools for Process Analysis and Design

Difficulty Level: Medium

AACSB: Systems and processes in organizations, including planning and design, production/operations, supply chains, marketing, and distribution

15. Which of the following is an excellent communication tool that enables anyone to see when a work order was generated, who worked on it and where, the order’s status, the customer’s key requirements or concerns, and any past or future communication with the customer?

a. Assembly chart

b. Assembly drawing

c. Route sheet

d. Process chart

Ans: C

Cognitive Domain: Knowledge (Remember)

Learning Objective: 9s-1. Employ tools for process selection, analysis, and design.

Answer Location: Tools for Process Analysis and Design

Difficulty Level: Medium

AACSB: Systems and processes in organizations, including planning and design, production/operations, supply chains, marketing, and distribution

16. Which of the following uses graphics to show all activities related to a process, including its inputs and outputs, decision points such as approvals and exceptions, and any cross-functional relationships?

a. Value stream map (VSM)

b. Process simulation

c. Route sheet

d. Process chart

Ans: D

Cognitive Domain: Knowledge (Remember)

Learning Objective: 9s-1. Employ tools for process selection, analysis, and design.

Answer Location: Tools for Process Analysis and Design

Difficulty Level: Medium

AACSB: Systems and processes in organizations, including planning and design, production/operations, supply chains, marketing, and distribution

17. Which of following can be used to pinpoint problems such as bottlenecks and delay points, wasteful activities such as rework, and locations where redundant or unnecessary activities occur?

a. Value stream map (VSM)

b. Process simulation

c. Service blueprint

d. Process chart

Ans: D

Cognitive Domain: Knowledge (Remember)

Learning Objective: 9s-1. Employ tools for process selection, analysis, and design.

Answer Location: Tools for Process Analysis and Design

Difficulty Level: Medium

AACSB: Systems and processes in organizations, including planning and design, production/operations, supply chains, marketing, and distribution

18. \_\_\_\_\_\_ is a process-mapping technique used to analyze and design the flow of materials and information across multiple processes.

a. A value stream map (VSM)

b. Simulation

c. A service blueprint

d. A process chart

Ans: A

Cognitive Domain: Knowledge (Remember)

Learning Objective: 9s-1. Employ tools for process selection, analysis, and design.

Answer Location: Tools for Process Analysis and Design

Difficulty Level: Medium

AACSB: Systems and processes in organizations, including planning and design, production/operations, supply chains, marketing, and distribution

19. A value stream map provides a \_\_\_\_\_\_ view of the process.

a. static

b. dynamic

c. irregular

d. active

Ans: A

Cognitive Domain: Knowledge (Remember)

Learning Objective: 9s-1. Employ tools for process selection, analysis, and design.

Answer Location: Tools for Process Analysis and Design

Difficulty Level: Medium

AACSB: Systems and processes in organizations, including planning and design, production/operations, supply chains, marketing, and distribution

20. A \_\_\_\_\_\_ provides a dynamic view of the process using computers, multiple inputs, work centers, and processing techniques that can help operation managers look at the variability of the process under different conditions.

a. value stream map (VSM)

b. process simulation

c. service blueprint

d. process chart

Ans: B

Cognitive Domain: Knowledge (Remember)

Learning Objective: 9s-1. Employ tools for process selection, analysis, and design.

Answer Location: Tools for Process Analysis and Design

Difficulty Level: Medium

AACSB: Systems and processes in organizations, including planning and design, production/operations, supply chains, marketing, and distribution

21. A \_\_\_\_\_\_ is a tool for analyzing processes that have high service content by specifying how the service will be provided.

a. value stream map (VSM)

b. process simulation

c. service blueprint

d. process chart

Ans: C

Cognitive Domain: Knowledge (Remember)

Learning Objective: 9s-1. Employ tools for process selection, analysis, and design.

Answer Location: Tools for Analyzing Service Processes

Difficulty Level: Medium

AACSB: Systems and processes in organizations, including planning and design, production/operations, supply chains, marketing, and distribution

22. Which of the following statements about creating blueprints is FALSE?

a. Identify the services process to be blueprinted and the customers who will experience the service.

b. Envision the service from the organization’s perspective.

c. Envision the actions of the service delivery personnel.

d. Consider all likely service scenarios and how they should play out ideally.

Ans: B

Cognitive Domain: Knowledge (Remember)

Learning Objective: 9s-1. Employ tools for process selection, analysis, and design.

Answer Location: Tools for Analyzing Service Processes

Difficulty Level: Medium

AACSB: Systems and processes in organizations, including planning and design, production/operations, supply chains, marketing, and distribution

23. Which of the following characteristics of a good process layout is FALSE?

a. It minimizes material handling.

b. It minimizes transportation costs.

c. It minimizes customer waiting time.

d. It maximizes employee waiting time.

Ans: D

Cognitive Domain: Knowledge (Remember)

Learning Objective: 9s-2. Describe and use the techniques for designing process and product layouts.

Answer Location: Techniques for Designing Process Layouts

Difficulty Level: Medium

AACSB: Systems and processes in organizations, including planning and design, production/operations, supply chains, marketing, and distribution

24. Which of the following is NOT a factor in determining the total cost of materials handling in manufacturing process layouts?

a. the cost of moving a load between departments

b. the number of loads to be moved between departments

c. the distance between departments

d. the number of employees in each department

Ans: D

Cognitive Domain: Knowledge (Remember)

Learning Objective: 9s-2. Describe and use the techniques for designing process and product layouts.

Answer Location: Techniques for Designing Process Layouts

Difficulty Level: Medium

AACSB: Systems and processes in organizations, including planning and design, production/operations, supply chains, marketing, and distribution

25. Which of the following methods is used for process layout analyses using quantitative data?

a. cost optimization method

b. relationship rating method

c. line balancing method

d. factor rating method

Ans: A

Cognitive Domain: Knowledge (Remember)

Learning Objective: 9s-2. Describe and use the techniques for designing process and product layouts.

Answer Location: Techniques for Designing Process Layouts

Difficulty Level: Medium

AACSB: Systems and processes in organizations, including planning and design, production/operations, supply chains, marketing, and distribution

26. The term *Xij*in the formula used for calculating the total cost of handling materials in a process layout stands for:

()

a. number of loads moved between Departments i and j

b. distance between Departments i and j

c. cost to move a load between Department i and j

d. number of departments or work centers

Ans: A

Cognitive Domain: Knowledge (Remember)

Learning Objective: 9s-2. Describe and use the techniques for designing process and product layouts.

Answer Location: Techniques for Designing Process Layouts

Difficulty Level: Medium

AACSB: Systems and processes in organizations, including planning and design, production/operations, supply chains, marketing, and distribution

27. Which of the following methods is used for process layout analyses using qualitative data?

a. cost optimization method

b. relationship rating method

c. line balancing method

d. Muther’s grid

Ans: B

Cognitive Domain: Knowledge (Remember)

Learning Objective: 9s-1. Employ tools for process selection, analysis, and design.

Answer Location: Process Layout Analyses Using Qualitative Data: The Relationship Rating Method

Difficulty Level: Medium

AACSB: Systems and processes in organizations, including planning and design, production/operations, supply chains, marketing, and distribution

28. The \_\_\_\_\_\_ is a technique developed by Richard Muther, used to design new layouts or change old ones based on qualitative criteria.

a. cost optimization method

b. relationship rating method

c. line balancing method

d. factor rating method

Ans: B

Cognitive Domain: Knowledge (Remember)

Learning Objective: 9s-1. Employ tools for process selection, analysis, and design.

Answer Location: Process Layout Analyses Using Qualitative Data: The Relationship Rating Method

Difficulty Level: Medium

AACSB: Systems and processes in organizations, including planning and design, production/operations, supply chains, marketing, and distribution

29. The \_\_\_\_\_\_ is a visual representation of relationship rating in which symbols or letters represent the relationships between departments.

a. cost optimization method

b. relationship rating method

c. line balancing method

d. Muther’s grid

Ans: D

Cognitive Domain: Knowledge (Remember)

Learning Objective: 9s-1. Employ tools for process selection, analysis, and design.

Answer Location: Process Layout Analyses Using Qualitative Data: The Relationship Rating Method

Difficulty Level: Medium

AACSB: Systems and processes in organizations, including planning and design, production/operations, supply chains, marketing, and distribution

30. The letters on the Muther’s grid indicate \_\_\_\_\_\_.

a. repulsion of the location of pairs of departments

b. desirability of the location of pairs of departments

c. distance between the pairs of departments

d. size of the location of pairs of departments

Ans: B

Cognitive Domain: Knowledge (Remember)

Learning Objective: 9s-1. Employ tools for process selection, analysis, and design.

Answer Location: Process Layout Analyses Using Qualitative Data: The Relationship Rating Method

Difficulty Level: Medium

AACSB: Systems and processes in organizations, including planning and design, production/operations, supply chains, marketing, and distribution

31. The letter *X* on the Muther’s grid indicates that \_\_\_\_\_\_.

a. closeness is very important

b. closeness is unimportant

c. closeness is undesirable

d. closeness is necessary

Ans: C

Cognitive Domain: Knowledge (Remember)

Learning Objective: 9s-1. Employ tools for process selection, analysis, and design.

Answer Location: Process Layout Analyses Using Qualitative Data: The Relationship Rating Method

Difficulty Level: Medium

AACSB: Systems and processes in organizations, including planning and design, production/operations, supply chains, marketing, and distribution

32. Which of the following techniques involves assigning production tasks in such a way that the time required to complete them is approximately equal across workstations?

a. the cost optimization method

b. the relationship rating method

c. the line balancing method

d. the factor rating method

Ans: C

Cognitive Domain: Knowledge (Remember)

Learning Objective: 9s-2. Describe and use the techniques for designing process and product layouts.

Answer Location: Technique for Designing Product Layouts: Line Balancing

Difficulty Level: Medium

AACSB: Systems and processes in organizations, including planning and design, production/operations, supply chains, marketing, and distribution

33. A line is said to be unbalanced when there is \_\_\_\_\_\_.

a. a large number of workstations

b. no occurrence of bottlenecks

c. idle time

d. minimal work in progress inventory

Ans: C

Cognitive Domain: Knowledge (Remember)

Learning Objective: 9s-2. Describe and use the techniques for designing process and product layouts.

Answer Location: Technique for Designing Product Layouts: Line Balancing

Difficulty Level: Medium

AACSB: Systems and processes in organizations, including planning and design, production/operations, supply chains, marketing, and distribution

34. The \_\_\_\_\_\_ is the relationship between two or more tasks that requires certain tasks to be done before others.

a. least priority relationship

b. precedence relationship

c. factor rating

d. contingency relationship

Ans: B

Cognitive Domain: Knowledge (Remember)

Learning Objective: 9s-2. Describe and use the techniques for designing process and product layouts.

Answer Location: Technique for Designing Product Layouts: Line Balancing

Difficulty Level: Medium

AACSB: Systems and processes in organizations, including planning and design, production/operations, supply chains, marketing, and distribution

35. \_\_\_\_\_\_ is the time required for the line to produce one unit to achieve an output rate that allows a firm to meet its demand requirements.

a. Idle time

b. Flow time

c. Cycle time

d. Setup time

Ans: C

Cognitive Domain: Knowledge (Remember)

Learning Objective: 9s-2. Describe and use the techniques for designing process and product layouts.

Answer Location: Technique for Designing Product Layouts: Line Balancing

Difficulty Level: Medium

AACSB: Systems and processes in organizations, including planning and design, production/operations, supply chains, marketing, and distribution

36. \_\_\_\_\_\_is the time required to completely produce an item if only one item is being produced at a time.

a. Idle time

b. Flow time

c. Cycle time

d. Setup time

Ans: B

Cognitive Domain: Knowledge (Remember)

Learning Objective: 9s-2. Describe and use the techniques for designing process and product layouts.

Answer Location: Technique for Designing Product Layouts: Line Balancing

Difficulty Level: Medium

AACSB: Systems and processes in organizations, including planning and design, production/operations, supply chains, marketing, and distribution

37. \_\_\_\_\_\_ is the difference between the total time available and the total time used to complete a process.

a. Idle time

b. Flow time

c. Cycle time

d. Setup time

Ans: A

Cognitive Domain: Knowledge (Remember)

Learning Objective: 9s-1. Employ tools for process selection, analysis, and design.

Answer Location: Steps in Line Balancing

Difficulty Level: Medium

AACSB: Systems and processes in organizations, including planning and design, production/operations, supply chains, marketing, and distribution

38. In line balancing, the number of workstations required (*N*) is given by \_\_\_\_\_\_.

a. cycle time / flow time

b. idle time / cycle time

c. sum of all task times / cycle time

d. sum of all task times / flow time

Ans: C

Cognitive Domain: Knowledge (Remember)

Learning Objective: 9s-1. Employ tools for process selection, analysis, and design.

Answer Location: Steps in Line Balancing

Difficulty Level: Easy

AACSB: Systems and processes in organizations, including planning and design, production/operations, supply chains, marketing, and distribution

39. In line balancing, the desired cycle time (*C*) is given by \_\_\_\_\_\_.

a. (Daily production time available) / (Units to be produced daily)

b. (Daily production time available) / (Number of workstations available)

c. (Units to be produced daily) / (Daily production time available)

d. (Total time used) / (Units to be produced daily)

Ans: A

Cognitive Domain: Knowledge (Remember)

Learning Objective: 9s-1. Employ tools for process selection, analysis, and design.

Answer Location: Steps in Line Balancing

Difficulty Level: Easy

AACSB: Systems and processes in organizations, including planning and design, production/operations, supply chains, marketing, and distribution

40. \_\_\_\_\_\_ is the measure of how well a process uses the time available to complete it.

a. Total flow time

b. Total cycle time

c. Production volume

d. Balance efficiency

Ans: D

Cognitive Domain: Knowledge (Remember)

Learning Objective: 9s-1. Employ tools for process selection, analysis, and design.

Answer Location: Steps in Line Balancing

Difficulty Level: Medium

AACSB: Systems and processes in organizations, including planning and design, production/operations, supply chains, marketing, and distribution

41. Which of the following rules assigns tasks in order of highest position weight?

a. most-following-tasks rule

b. ranked-position-weight rule

c. least-number-of-following-tasks rule

d. shortest-operating-time rule

Ans: B

Cognitive Domain: Knowledge (Remember)

Learning Objective: 9s-1. Employ tools for process selection, analysis, and design.

Answer Location: Table 9S.2: Options for Balancing an Assembly Line

Difficulty Level: Easy

AACSB: Systems and processes in organizations, including planning and design, production/operations, supply chains, marketing, and distribution

42. Which of the following statements is true about the most-following-tasks rule?

a. assigns tasks in order of the most number of following tasks

b. assigns tasks in order of the tasks with the longest operating time

c. assigns tasks in order of the tasks with the shortest operating time

d. assigns tasks in order of the least number of following tasks

Ans: A

Cognitive Domain: Knowledge (Remember)

Learning Objective: 9s-1. Employ tools for process selection, analysis, and design.

Answer Location: Table 9S.2: Options for Balancing an Assembly Line

Difficulty Level: Easy

AACSB: Systems and processes in organizations, including planning and design, production/operations, supply chains, marketing, and distribution

43. Which of the following statements is true about the least-number-of-following-tasks rule?

a. assigns tasks in order of the most number of following tasks

b. assigns tasks in order of the tasks with the longest operating time

c. assigns tasks in order of the tasks with the shortest operating time

d. assigns tasks in order of the least number of following tasks

Ans: D

Cognitive Domain: Knowledge (Remember)

Learning Objective: 9s-1. Employ tools for process selection, analysis, and design.

Answer Location: Table 9S.2: Options for Balancing an Assembly Line

Difficulty Level: Easy

AACSB: Systems and processes in organizations, including planning and design, production/operations, supply chains, marketing, and distribution

44. Which of the following rules assigns tasks in order of the task with shortest operating time?

a. most-following-tasks rule

b. ranked-position-weight rule

c. least-number-of-following-tasks rule

d. shortest-operating-time rule

Ans: D

Cognitive Domain: Knowledge (Remember)

Learning Objective: 9s-1. Employ tools for process selection, analysis, and design.

Answer Location: Table 9S.2: Options for Balancing an Assembly Line

Difficulty Level: Easy

AACSB: Systems and processes in organizations, including planning and design, production/operations, supply chains, marketing, and distribution

45. An assembly line to be balanced has six tasks in precedence. The task times are shown in the following table. Based on demand forecasts, the output rate has to be 160 units per day. The line operates 8 hours a day. Calculate the desired cycle time C.

|  |  |  |
| --- | --- | --- |
| *Tasks* | *Immediate Predecessor* | *Task Time in Minutes* |
| A | NONE | 3 |
| B | A | 1 |
| C | A | 2 |
| D | B, C | 3 |
| E | C | 3 |
| F | D, E | 2 |

a. 3 minutes/unit

b. 4 minutes/unit

c. 5 minutes/unit

d. 6 minutes/unit

Ans: A

Cognitive Domain: Knowledge (Remember)

Learning Objective: 9s-1. Employ tools for process selection, analysis, and design.

Answer Location: Steps in Line Balancing

Difficulty Level: Medium

AACSB: Systems and processes in organizations, including planning and design, production/operations, supply chains, marketing, and distribution

46. An assembly line to be balanced has six tasks in precedence. The task times are shown in the following table. Based on demand forecasts, the output rate has to be 160 units per day. The line operates 8 hours a day. Compute the theoretical number of work stations required (*N*).

|  |  |  |
| --- | --- | --- |
| *Tasks* | *Immediate Predecessor* | *Task Time in Minutes* |
| A | NONE | 3 |
| B | A | 1 |
| C | A | 2 |
| D | B, C | 3 |
| E | C | 3 |
| F | D, E | 2 |

a. 3

b. 4

c. 5

d. 6

Ans: C

Cognitive Domain: Analysis (Analyze)

Learning Objective: 9s-1. Employ tools for process selection, analysis, and design.

Answer Location: Steps in Line Balancing

Difficulty Level: Medium

AACSB: Analytical thinking (able to analyze and frame problems)

47. An assembly line to be balanced has six tasks in precedence. The task times are shown in the following table. Based on demand forecasts, the output rate has to be 160 units per day. The line operates 8 hours a day. Compute the theoretical minimum amount of idle time (*I*).

*Tasks Immediate Predecessor Task Time in Minutes*

A NONE 3

B A 1

C A 2

D B, C 3

E C 3

F D, E 2

a. 0

b. 1

c. 2

d. 3

Ans: B

Cognitive Domain: Analysis (Analyze)

Learning Objective: 9s-1. Employ tools for process selection, analysis, and design.

Answer Location: Steps in Line Balancing

Difficulty Level: Medium

AACSB: Analytical thinking (able to analyze and frame problems)

48. An assembly line to be balanced has six tasks in precedence. The task times are shown in the following table. Based on demand forecasts, the output rate has to be 160 units per day. The line operates 8 hours a day. Compute the balance efficiency E.

|  |  |  |
| --- | --- | --- |
| *Tasks* | *Immediate Predecessor* | *Task Time in Minutes* |
| A | NONE | 3 |
| B | A | 1 |
| C | A | 2 |
| D | B, C | 3 |
| E | C | 3 |
| F | D, E | 2 |

a. 93%

b. 87%

c. 80%

d. 100%

Ans: A

Cognitive Domain: Analysis (Analyze)

Learning Objective: 9s-1. Employ tools for process selection, analysis, and design.

Answer Location: Steps in Line Balancing

Difficulty Level: Medium

AACSB: Analytical thinking (able to analyze and frame problems)

49. An assembly line to be balanced has six tasks in precedence. The task times are shown in the following table. Based on demand forecasts, the output rate has to be 160 units per day. The line operates 8 hours a day. Compute the task sequence using the most-following-tasks rule.

*Tasks Immediate Predecessor Task Time in Minutes*

A NONE 3

B A 1

C A 2

D B, C 3

E C 3

F D, E 2

a. A, C & B, D, E, F

b. A, B & E, C, D, F

c. A, B, C, D, E, F

d. A, B, C, D & E, F

Ans: A

Cognitive Domain: Analysis (Analyze)

Learning Objective: 9s-1. Employ tools for process selection, analysis, and design.

Answer Location: Steps in Line Balancing

Difficulty Level: Medium

AACSB: Analytical thinking (able to analyze and frame problems)

50. An assembly line to be balanced has six tasks in precedence. The task times are shown in the following table. Based on demand forecasts, the output rate has to be 160 units per day. The line operates 8 hours a day. Compute the task sequence using the ranked-position-weight rule.

|  |  |  |
| --- | --- | --- |
| *Tasks* | *Immediate Predecessor* | *Task Time in Minutes* |
| A | NONE | 3 |
| B | A | 1 |
| C | A | 2 |
| D | B, C | 3 |
| E | C | 3 |
| F | D, E | 2 |

a. A, C & B, D, E, F

b. A, B & E, C, D, F

c. A, B, C, D, E, F

d. A, B, C, D & E, F

Ans: A

Cognitive Domain: Analysis (Analyze)

Learning Objective: 9s-1. Employ tools for process selection, analysis, and design.

Answer Location: Steps in Line Balancing

Difficulty Level: Medium

AACSB: Analytical thinking (able to analyze and frame problems)

51. Real-life layout problems can be solved \_\_\_\_\_\_.

a. manually

b. graphically

c. using software

d. easily

Ans: C

Cognitive Domain: Analysis (Analyze)

Learning Objective: 9s-1. Employ tools for process selection, analysis, and design.

Answer Location: Computer Software for Designing Process Layout

Difficulty Level: Easy

AACSB: Analytical thinking (able to analyze and frame problems)

52. Which of the following statements is FALSE about the use of computer software to solve layout problems?

a. Computer software rely to a great extent on heuristic approaches.

b. Large line balancing problems for product layouts can be solved using IBM’s COSMOL or GE’s ASYBL.

c. Computer software can be used to solve real-life, complex layout problems that cannot be solved manually.

d. Computer programs guarantee optimal solutions.

Ans: D

Cognitive Domain: Analysis (Analyze)

Learning Objective: 9s-1. Employ tools for process selection, analysis, and design.

Answer Location: Computer Software for Designing Process Layout

Difficulty Level: Easy

AACSB: Analytical thinking (able to analyze and frame problems)

53. Which of the following is NOT a tool for analyzing and designing processes?

a. assembly drawings

b. process simulation

c. value stream mapping (VSM)

d. ABC analysis

Ans: D

Cognitive Domain: Analysis (Analyze)

Learning Objective: 9s-1. Employ tools for process selection, analysis, and design.

Answer Location: Tools for Process Analysis and Design

Difficulty Level: Easy

AACSB: Analytical thinking (able to analyze and frame problems)

54. Which of the following is NOT a reason that a route sheet is an excellent communication tool?

a. It enables anyone to see when a work order was generated.

b. It reveals who worked on a work order.

c. It shows the status of the work order.

d. It shows the profit margin on the order.

Ans: D

Cognitive Domain: Analysis (Analyze)

Learning Objective: 9s-1. Employ tools for process selection, analysis, and design.

Answer Location: Tools for Process Analysis and Design

Difficulty Level: Easy

AACSB: Analytical thinking (able to analyze and frame problems)

55. Which of the following is NOT one of the symbols usually used in a process chart?

a. a hexagon

b. a diamond

c. a rectangle

d. an arrow

Ans: A

Cognitive Domain: Analysis (Analyze)

Learning Objective: 9s-1. Employ tools for process selection, analysis, and design.

Answer Location: Tools for Process Analysis and Design

Difficulty Level: Easy

AACSB: Analytical thinking (able to analyze and frame problems)

56. The most common way to design a process layout for a manufacturing facility is to arrange departments or work centers such that \_\_\_\_\_\_.

a. the total cost of materials handling is minimized

b. the total time for materials handling is minimized

c. the total man hours for materials handling is minimized

d. the total distance travelled for materials handling is minimized

Ans: A

Cognitive Domain: Analysis (Analyze)

Learning Objective: 9s-1. Employ tools for process selection, analysis, and design.

Answer Location: Process Layout Analyses Using Quantitative Data: The Cost Minimization Method

Difficulty Level: Easy

AACSB: Analytical thinking (able to analyze and frame problems)

57. In selecting a process, we can plot the costs for each process in a breakeven analysis graph. When the costs of different processes are identical at different points, the lines representing these costs intersect each other. These points of intersection are known as \_\_\_\_\_\_.

a. points of indifference

b. relationship rating points

c. identical points

d. breakeven points

Ans: A

Cognitive Domain: Knowledge (Remember)

Learning Objective: 9s-1. Employ tools for process selection, analysis, and design.

Answer Location: Tools for Process Selection

Difficulty Level: Easy

AACSB: Systems and processes in organizations, including planning and design, production/operations, supply chains, marketing, and distribution

58. An assembly drawing shows \_\_\_\_\_\_.

a. an enlarged view of a product with details of all of its parts and subassemblies

b. how a product’s parts go together

c. the order in which they are assembled

d. detailed instructions for all major parts of the product

Ans: A

Cognitive Domain: Knowledge (Remember)

Learning Objective: 9s-1. Employ tools for process selection, analysis, and design.

Answer Location: Assembly Drawings and Charts and Route Sheets

Difficulty Level: Easy

AACSB: Systems and processes in organizations, including planning and design, production/operations, supply chains, marketing, and distribution

59. Working drawings refer to \_\_\_\_\_\_.

a. assembly charts

b. detailed instructions for all major parts of the product

c. *gozinto* charts

d. assembly drawings

Ans: D

Cognitive Domain: Knowledge (Remember)

Learning Objective: 9s-1. Employ tools for process selection, analysis, and design.

Answer Location: Assembly Drawings and Charts and Route Sheets

Difficulty Level: Easy

AACSB: Systems and processes in organizations, including planning and design, production/operations, supply chains, marketing, and distribution

60. Which of the following shows how a product’s parts go together and the order in which they are assembled?

a. Pareto chart

b. assembly chart

c. process chart

d. value stream mapping (VSM)

Ans: B

Cognitive Domain: Knowledge (Remember)

Learning Objective: 9s-1. Employ tools for process selection, analysis, and design.

Answer Location: Assembly Drawings and Charts and Route Sheets

Difficulty Level: Easy

AACSB: Systems and processes in organizations, including planning and design, production/operations, supply chains, marketing, and distribution

61. A route sheet is \_\_\_\_\_\_.

a. also known as a *gozinto* sheet

b. a document that describes the sequence of different operations, places, or people involved in a process

c. used to identify points of cost intersection

d. used to show the materials used in a production process

Ans: B

Cognitive Domain: Knowledge (Remember)

Learning Objective: 9s-1. Employ tools for process selection, analysis, and design.

Answer Location: Assembly Drawings and Charts and Route Sheets

Difficulty Level: Easy

AACSB: Systems and processes in organizations, including planning and design, production/operations, supply chains, marketing, and distribution

62. Which of the following helps organize work orders by tracking the parts for products and the status of jobs during their scheduling, production, and quality control phases?

a. route sheet

b. Pareto chart

c. assembly chart

d. assembly drawing

Ans: A

Cognitive Domain: Knowledge (Remember)

Learning Objective: 9s-1. Employ tools for process selection, analysis, and design.

Answer Location: Assembly Drawings and Charts and Route Sheets

Difficulty Level: Easy

AACSB: Systems and processes in organizations, including planning and design, production/operations, supply chains, marketing, and distribution

63. Which of the following is NOT true of a process chart?

a. It shows inputs and outputs in a process.

b. It shows decision points such as approvals and exceptions.

c. It shows any cross-functional relationships.

d. It shows costs and points of indifference.

Ans: D

Cognitive Domain: Knowledge (Remember)

Learning Objective: 9s-1. Employ tools for process selection, analysis, and design.

Answer Location: Assembly Drawings and Charts and Route Sheets

Difficulty Level: Easy

AACSB: Systems and processes in organizations, including planning and design, production/operations, supply chains, marketing, and distribution

64. A graphic used to analyze and design the flow of materials and information across multiple processes is known as \_\_\_\_\_\_.

a. a value stream mapping (VSM)

b. a Pareto chart

c. an assembly chart

d. an assembly drawing

Ans: A

Cognitive Domain: Knowledge (Remember)

Learning Objective: 9s-1. Employ tools for process selection, analysis, and design.

Answer Location: Assembly Drawings and Charts and Route Sheets

Difficulty Level: Easy

AACSB: Systems and processes in organizations, including planning and design, production/operations, supply chains, marketing, and distribution

65. A technique that provides a dynamic view of a process using computers, multiple inputs, work centers, and processing techniques to help an operations manager look at the variability of a process under different conditions is known as \_\_\_\_\_\_.

a. a value stream map

b. a process simulation

c. a Pareto mapping

d. an assembly chart

Ans: B

Cognitive Domain: Knowledge (Remember)

Learning Objective: 9s-1. Employ tools for process selection, analysis, and design.

Answer Location: Assembly Drawings and Charts and Route Sheets

Difficulty Level: Easy

AACSB: Systems and processes in organizations, including planning and design, production/operations, supply chains, marketing, and distribution

66. A service blueprint refers to \_\_\_\_\_\_.

a. a tool for analyzing processes that have high service content by specifying how the service will be provided

b. a technique that provides a dynamic view of a process using computers, multiple inputs, work centers, and processing techniques to help an operations manager look at the variability of a process under different conditions

c. a graphic used to analyze and design the flow of materials and information across multiple processes

d. a diagram that uses graphics to show all activities related to a process, including its inputs and outputs, decision points such as approvals and exceptions, and any cross-functional relationships

Ans: A

Cognitive Domain: Knowledge (Remember)

Learning Objective: 9s-1. Employ tools for process selection, analysis, and design.

Answer Location: Assembly Drawings and Charts and Route Sheets

Difficulty Level: Easy

AACSB: Systems and processes in organizations, including planning and design, production/operations, supply chains, marketing, and distribution

67. A technique developed by Richard Muther used to design new layouts or change old ones based on qualitative criteria is known as \_\_\_\_\_\_.

a. Muther’s grid

b. relationship rating

c. precedence relationships

d. line balancing

Ans: B

Cognitive Domain: Knowledge (Remember)

Learning Objective: 9s-2. Describe and use the techniques for designing process and product layouts.

Answer Location: Process Layout Analyses Using Qualitative Data: The Relationship Rating Method

Difficulty Level: Easy

AACSB: Systems and processes in organizations, including planning and design, production/operations, supply chains, marketing, and distribution

68. A Muther’s grid \_\_\_\_\_\_.

a. is a visual representation of relationship rating in which symbols or letters represent the relationships between departments

b. helps us to assign production tasks in such a way that the time required to complete them is approximately equal across workstations

c. shows the relationship between two or more tasks that requires certain tasks to be done before others

d. identities the time requirements for a line of production to produce one unit

Ans: A

Cognitive Domain: Knowledge (Remember)

Learning Objective: 9s-1. Employ tools for process selection, analysis, and design.

Answer Location: Process Layout Analyses Using Qualitative Data: The Relationship Rating Method

Difficulty Level: Easy

AACSB: Systems and processes in organizations, including planning and design, production/operations, supply chains, marketing, and distribution

69. Line balancing refers to \_\_\_\_\_\_.

a. the organization of production such that costs of different process are equal

b. the assignment of production tasks in such a way that the time required to complete them is approximately equal across workstations

c. the identification of time requirements for a line of production to produce one unit

d. the organization of production tasks in such a way that the cost of parts required to complete them is approximately equal across workstations

Ans: B

Cognitive Domain: Knowledge (Remember)

Learning Objective: 9s-1. Employ tools for process selection, analysis, and design.

Answer Location: Technique for Designing Product Layouts: Line Balancing

Difficulty Level: Easy

AACSB: Systems and processes in organizations, including planning and design, production/operations, supply chains, marketing, and distribution

70. The relationship between two or more tasks that requires certain tasks to be done before others is known as \_\_\_\_\_\_.

a. a precedence relationship

b. a Muther’s grid relationship

c. points of indifference

d. an assembly relationship

Ans: A

Cognitive Domain: Knowledge (Remember)

Learning Objective: 9s-1. Employ tools for process selection, analysis, and design.

Answer Location: Process Layout Analyses Using Qualitative Data: The Relationship Rating Method

Difficulty Level: Easy

AACSB: Systems and processes in organizations, including planning and design, production/operations, supply chains, marketing, and distribution

71. The time required for the line to produce one unit to achieve an output rate that allows a firm to meet its demand requirements is known as \_\_\_\_\_\_.

a. cycle time

b. flow time

c. idle time

d. balance efficiency

Ans: A

Cognitive Domain: Knowledge (Remember)

Learning Objective: 9s-1. Employ tools for process selection, analysis, and design.

Answer Location: Technique for Designing Product Layouts: Line Balancing

Difficulty Level: Easy

AACSB: Systems and processes in organizations, including planning and design, production/operations, supply chains, marketing, and distribution\

72. The time required to completely produce an item if only one unit is being produced at a time is known as \_\_\_\_\_\_.

a. cycle time

b. flow time

c. idle time

d. balance efficiency

Ans: B

Cognitive Domain: Knowledge (Remember)

Learning Objective: 9s-1. Employ tools for process selection, analysis, and design.

Answer Location: Technique for Designing Product Layouts: Line Balancing

Difficulty Level: Easy

AACSB: Systems and processes in organizations, including planning and design, production/operations, supply chains, marketing, and distribution

73. The difference between the total time available and the total time used to complete a process is known as \_\_\_\_\_\_.

a. cycle time

b. flow time

c. idle time

d. balance efficiency

Ans: C

Cognitive Domain: Knowledge (Remember)

Learning Objective: 9s-1. Employ tools for process selection, analysis, and design.

Answer Location: Technique for Designing Product Layouts: Line Balancing

Difficulty Level: Easy

AACSB: Systems and processes in organizations, including planning and design, production/operations, supply chains, marketing, and distribution

74. The measure of how well a process uses the time available to complete it is called \_\_\_\_\_\_.

a. cycle time

b. flow time

c. idle time

d. balance efficiency

Ans: D

Cognitive Domain: Knowledge (Remember)

Learning Objective: 9s-1. Employ tools for process selection, analysis, and design.

Answer Location: Steps in Line Balancing

Difficulty Level: Easy

AACSB: Systems and processes in organizations, including planning and design, production/operations, supply chains, marketing, and distribution

75. Idle time is computed by using which formula?

a. Total time used – Total time available

b. Total time used + Total time available

c. Total time available – Total time used

d. Total time used / Total time available

Ans: C

Cognitive Domain: Knowledge (Remember)

Learning Objective: 9s-2. Describe and use the techniques for designing process and product layouts.

Answer Location: Technique for Designing Product Layouts: Line Balancing

Difficulty Level: Easy

AACSB: Systems and processes in organizations, including planning and design, production/operations, supply chains, marketing, and distribution

76. The daily output required from an assembly line is 120 units. If the line operates 8 hours a day, what is the cycle time per unit?

a. 4 hours

b. 4 minutes

c. 15 seconds

d. 1 hour

Ans: B

Cognitive Domain: Analysis (Analyze)

Learning Objective: 9s-1. Employ tools for process selection, analysis, and design.

Answer Location: Technique for Designing Product Layouts: Line Balancing

Difficulty Level: Easy

AACSB: Analysis (Analyze)

77. The daily output required from an assembly line is 300 units. If the line operates 5 hours a day, what is the cycle time per unit?

a. 1 hour

b. 4 minutes

c. 1 minute

d. 25 seconds

Ans: C

Cognitive Domain: Analysis (Analyze)

Learning Objective: 9s-1. Employ tools for process selection, analysis, and design.

Answer Location: Technique for Designing Product Layouts: Line Balancing

Difficulty Level: Easy

AACSB: Analysis (Analyze)

78. The daily output required from an assembly line is 600 units. If the line operates 12 hours a day, what is the cycle time per unit?

a. 1 minute and 12 seconds

b. 3 minutes and 18 seconds

c. 6 minutes and 44 seconds

d. 8 minutes and 28 seconds

Ans: A

Cognitive Domain: Analysis (Analyze)

Learning Objective: 9s-1. Employ tools for process selection, analysis, and design.

Answer Location: Technique for Designing Product Layouts: Line Balancing

Difficulty Level: Easy

AACSB: Analysis (Analyze)

79. The daily output required from an assembly line is 80 units. If the line operates 4 hours a day, what is the cycle time per unit?

a. 3 hours

b. 3 minutes

c. 3 seconds

d. 3 days

Ans: A

Cognitive Domain: Analysis (Analyze)

Learning Objective: 9s-1. Employ tools for process selection, analysis, and design.

Answer Location: Technique for Designing Product Layouts: Line Balancing

Difficulty Level: Easy

AACSB: Analysis (Analyze)

80. The sum of all task times in producing a product is 15 minutes. Eighty units need to be produced in 4 hours. What is the number of workstations required?

a. five

b. six

c. seven

d. eight

Ans: A

Cognitive Domain: Analysis (Analyze)

Learning Objective: 9s-1. Employ tools for process selection, analysis, and design.

Answer Location: Technique for Designing Product Layouts: Line Balancing

Difficulty Level: Easy

AACSB: Analysis (Analyze)

81. The sum of all task times in producing a product is 72 minutes. If the cycle time is 72 minutes, then the number of workstations required is \_\_\_\_\_\_.

a. one

b. two

c. three

d. four

Ans: A

Cognitive Domain: Analysis (Analyze)

Learning Objective: 9s-1. Employ tools for process selection, analysis, and design.

Answer Location: Technique for Designing Product Layouts: Line Balancing

Difficulty Level: Easy

AACSB: Analysis (Analyze)

82. In a production process, the total time consumed by all tasks is 45 minutes. The total time available is 60 minutes. Given this information, which of the following statements is true?

a. The balance efficiency is 75%.

b. The balance inefficiency is 175%.

c. The balance efficiency is 25%.

d. The balance inefficiency is 125%.

Ans: A

Cognitive Domain: Analysis (Analyze)

Learning Objective: 9s-1. Employ tools for process selection, analysis, and design.

Answer Location: Technique for Designing Product Layouts: Line Balancing

Difficulty Level: Easy

AACSB: Analysis (Analyze)

83. In a production process, the total time consumed by all tasks is 300 minutes. The total time available is 270 minutes. Given this information, which of the following statements is FALSE?

a. The balance efficiency is .9.

b. The balance inefficiency is 10%.

c. The balance efficiency is 33%.

d. The balance inefficiency is 90%.

Ans: C

Cognitive Domain: Analysis (Analyze)

Learning Objective: 9s-1. Employ tools for process selection, analysis, and design.

Answer Location: Technique for Designing Product Layouts: Line Balancing

Difficulty Level: Easy

AACSB: Analysis (Analyze)

84. CRAFT is an acronym for \_\_\_\_\_\_.

a. Computerized Relative Allocation of Facilities Technique

b. Centralized Relative Allocation of Facilities Technique

c. Computerized Relative Assessment of Facilities Technique

d. Centralized Relative Assessment of Facilities Technique

Ans: A

Cognitive Domain: Analysis (Analyze)

Learning Objective: 9s-1. Employ tools for process selection, analysis, and design.

Answer Location: Computer Software for Designing Process Layouts

Difficulty Level: Easy

AACSB: Analysis (Analyze)

85. Which of the following is true of ASYBL?

a. It stands for Assembly Line Configuration Program.

b. It is used to identify indifference points.

c. It leads to efficiencies in cost management.

d. It stands for Asymmetric Balancing of Production Lines.

Ans: A

Cognitive Domain: Analysis (Analyze)

Learning Objective: 9s-1. Employ tools for process selection, analysis, and design.

Answer Location: Computer Software for Designing Process Layouts

Difficulty Level: Easy

AACSB: Analysis (Analyze)

86. Which of the following is true of ASYBL?

a. It stands for Asymmetric Balancing of Production Lines.

b. It is used to solve problems related to line balancing.

c. It leads to efficiencies in cost management.

d. It is used to identify indifference points.

Ans: B

Cognitive Domain: Analysis (Analyze)

Learning Objective: 9s-1. Employ tools for process selection, analysis, and design.

Answer Location: Computer Software for Designing Process Layouts

Difficulty Level: Easy

AACSB: Analysis (Analyze)

87. CORELAP is \_\_\_\_\_\_.

a. used to balance asymmetric production lines

b. the cause of efficiencies in cost management

c. used to identify indifference points

d. the acronym for Computerized Relationship Layout Planning

Ans: D

Cognitive Domain: Analysis (Analyze)

Learning Objective: 9s-1. Employ tools for process selection, analysis, and design.

Answer Location: Computer Software for Designing Process Layouts

Difficulty Level: Easy

AACSB: Analysis (Analyze)

88. ALDEP is \_\_\_\_\_\_.

a. used to balance asymmetric production lines

b. a method to promote efficiencies in managing production costs

c. the acronym for Automated Layout Design Program

d. the acronym for Asymmetric Line Development Program

Ans: C

Cognitive Domain: Analysis (Analyze)

Learning Objective: 9s-1. Employ tools for process selection, analysis, and design.

Answer Location: Computer Software for Designing Process Layouts

Difficulty Level: Easy

AACSB: Analysis (Analyze)

89. Which of the following is NOT a rule in balancing an assembly line?

a. the most-following-tasks rule

b. the ranked-positional-weight rule

c. the longest-operating-time rule

d. the most-frequent-following-tasks rule

Ans: D

Cognitive Domain: Analysis (Analyze)

Learning Objective: 9s-1. Employ tools for process selection, analysis, and design.

Answer Location: Steps in Line Balancing

Difficulty Level: Easy

AACSB: Analysis (Analyze)

90. The desired cycle time in a production process is computed by \_\_\_\_\_\_.

a. the difference between (Daily production time available) and (Number of units to be produced daily)

b. the sum of (Daily production time available) and (Number of units to be produced daily)

c. the ratio of (Daily production time available) to (Number of units to be produced daily)

d. the product of (Daily production time available) to (Number of units to be produced daily)

Ans: C

Cognitive Domain: Analysis (Analyze)

Learning Objective: 9s-1. Employ tools for process selection, analysis, and design.

Answer Location: Steps in Line Balancing

Difficulty Level: Easy

AACSB: Analysis (Analyze)

91. To calculate the theoretical minimum number of workstations (*N*) required, \_\_\_\_\_\_.

a. we need to first calculate the cycle time

b. we need to first calculate the difference between task times

c. we need to first calculate the balance efficiency

d. we need to first calculate the flow time

Ans: A

Cognitive Domain: Analysis (Analyze)

Learning Objective: 9s-1. Employ tools for process selection, analysis, and design.

Answer Location: Steps in Line Balancing

Difficulty Level: Easy

AACSB: Analysis (Analyze)

92. Balance efficiency is calculated as \_\_\_\_\_\_.

a. the product of (Total time used) and (Total time available)

b. the ratio of (Total time used) to (Total time available)

c. the difference between (Total time used) and (Total time available)

d. the sum of (Total time used) and (Total time available)

Ans: B

Cognitive Domain: Analysis (Analyze)

Learning Objective: 9s-1. Employ tools for process selection, analysis, and design.

Answer Location: Steps in Line Balancing

Difficulty Level: Easy

AACSB: Analysis (Analyze)

93. As real-life layout problems are typically large, arriving at an optimal solution to such problems \_\_\_\_\_\_.

a. is very expensive

b. is time consuming

c. is nearly impossible

d. is quickly accomplished by using computers

Ans: C

Cognitive Domain: Analysis (Analyze)

Learning Objective: 9s-1. Employ tools for process selection, analysis, and design.

Answer Location: Computer Software for Designing Process Layouts

Difficulty Level: Easy

AACSB: Analysis (Analyze)

94. As real-life layout problems are typically large, we may use heuristic approaches. These approaches provide solutions that \_\_\_\_\_\_.

a. are not necessarily optimal, but are satisfactory

b. are both optimal and satisfactory

c. are neither optimal nor satisfactory

d. are not necessarily satisfactory, but are optimal

Ans: A

Cognitive Domain: Analysis (Analyze)

Learning Objective: 9s-1. Employ tools for process selection, analysis, and design.

Answer Location: Computer Software for Designing Process Layouts

Difficulty Level: Easy

AACSB: Analysis (Analyze)

95.Many commercially available computer packages such as CRAFT, CORELAP, and ALDEP may be used to solve large-scale process layout problems. These programs rely to a great extent on \_\_\_\_\_\_.

a. intuitive approaches

b. heuristic approaches

c. forecasting techniques

d. deterministic modeling

Ans: B

Cognitive Domain: Analysis (Analyze)

Learning Objective: 9s-1. Employ tools for process selection, analysis, and design.

Answer Location: Computer Software for Designing Process Layouts

Difficulty Level: Easy

AACSB: Analysis (Analyze)

96. A *gozinto* chart is another name for \_\_\_\_\_\_.

a. an assembly drawing

b. an assembly chart

c. a Pareto chart

d. a route sheet

Ans: B

Cognitive Domain: Analysis (Analyze)

Learning Objective: 9s-1. Employ tools for process selection, analysis, and design.

Answer Location: Steps in Line Balancing

Difficulty Level: Easy

AACSB: Analysis (Analyze)

97. In process layouts, the process facilities are shared by a wide variety of different products. Consequently, \_\_\_\_\_\_.

a. the relative positioning of the various departments is a compromise

b. the relative positioning of the various departments is usually a perfect solution

c. the relative positioning of the various departments is an expensive solution

d. the relative positioning of the various departments is a quick solution

Ans: A

Cognitive Domain: Analysis (Analyze)

Learning Objective: 9s-1. Employ tools for process selection, analysis, and design.

Answer Location: Steps in Line Balancing

Difficulty Level: Easy

AACSB: Analysis (Analyze)

98. If the sum of all task times is 100 and the cycle time is 10, then \_\_\_\_\_\_.

a. the number of workstations is 10

b. the number of workstations is 1,000

c. the balance efficiency is .88

d. the idle time is 3

Ans: A

Cognitive Domain: Analysis (Analyze)

Learning Objective: 9s-1. Employ tools for process selection, analysis, and design.

Answer Location: Steps in Line Balancing

Difficulty Level: Easy

AACSB: Analysis (Analyze)

99. If the sum of all task times is 50 and the cycle time is 10, then \_\_\_\_\_\_.

a. the number of workstations is 5

b. the number of workstations is 500

c. the balance efficiency is .88

d. the idle time is 3

Ans: A

Cognitive Domain: Analysis (Analyze)

Learning Objective: 9s-1. Employ tools for process selection, analysis, and design.

Answer Location: Steps in Line Balancing

Difficulty Level: Easy

AACSB: Analysis (Analyze)

100. If the sum of all task times is 20 and the cycle time is 20, then \_\_\_\_\_\_.

a. the number of workstations is one

b. the number of workstations is 400

c. the balance efficiency is .88

d. the idle time is 3

Ans: A

Cognitive Domain: Analysis (Analyze)

Learning Objective: 9s-1. Employ tools for process selection, analysis, and design.

Answer Location: Steps in Line Balancing

Difficulty Level: Easy

AACSB: Analysis (Analyze)