CHAPTER 13: AGGREGATE PLANNING

TRUE/FALSE

1. High levels of efficiency at Anheuser-Busch are the result of excellence in aggregate planning and in high facility utilization.
2. Aggregate planning occurs over the medium or intermediate future of 3 to 18 months.
3. The only objective of aggregate planning is to minimize the cost of matching capacity to demand over the planning period.
4. Aggregate planning in manufacturing ties organizational strategic goals to a production plan.
5. One of the four things needed for aggregate planning is a logical overall unit for measuring sales and output.
6. Plans for new product development generally fall within the scope of aggregate planning.
7. The aggregate planning process usually includes expediting and dispatching of individual products.
8. Disaggregation is the process of breaking the aggregate plan into greater detail; one example of this detail is the Master Production Schedule.
9. One question that operations managers must answer when generating an aggregate plan is should prices or other factors be changed to influence demand.
10. One of the demand options of aggregate planning is to vary the workforce by hiring or firing.
11. The strategies of aggregate planning are broadly divided into demand options and capacity options.
12. In aggregate planning, the amount of overtime and the size of the work force are both adjustable elements of capacity.
13. In aggregate planning, one of the adjustable elements of capacity is the extent of subcontracting.
14. One motive for using demand-influencing aggregate planning options is to create uses for excess capacity within an organization.
15. The use of part-time workers as an aggregate planning option may be less costly than using full-time workers, but may also reduce quality levels.
16. Advertising and promotion are methods of manipulating product or service supply in aggregate planning.
17. Because service firms do not inventory their output, pure chase strategy is not appropriate.
18. The level scheduling strategy allows lower inventories than the pure chase strategy.
19. Mixed strategies in aggregate planning utilize inventory, work force, and production rate changes over the planning horizon.
20. Finding an ideal mixed strategy is complicated by the huge number of possible strategies.
21. Charting and graphing techniques are easy to understand and use, but are not well-suited for generating optimal strategies.
22. The transportation method of linear programming is an optimizing approach to aggregate planning.
23. The management coefficients model is a formal planning model built around a manager's experience and performance.
24. Controlling the cost of labor in services involves quick response to consumer demand, on-call labor for unexpected demand, flexibility of labor for reallocation, and flexibility of hours or rate of output of individual workers.
25. Aggregate planning for fast food restaurants is very similar to aggregate planning in manufacturing, but with much smaller units of time.
26. A hotel room that goes unrented and an airline seat that goes unsold are both examples of perishability of services inventory.
MULTIPLE CHOICE

27. Which of the following statements regarding Anheuser-Busch is false?
a. Aggregate planning is a major part of its competitive edge.
b. All four stages of beer production are integrated into the aggregate plan.
c. High facility utilization complements its successful aggregate planning.
d. Its aggregate planning focuses entirely on facilities, ignoring employee issues.
e. Even with excellent aggregate planning, its plants need to have high utilization.

28. The typical time horizon for aggregate planning is
a. less than a month
b. up to 3 months
c. 3 to 18 months
d. over one year
e. over 5 years

29. Which of the following is the term used for medium range capacity planning with a time horizon of three to eighteen months?
a. material requirements planning
b. short-range planning
c. strategic planning
d. aggregate planning
e. none of the above

30. Aggregate planning is capacity planning for
a. the long range
b. the intermediate range
c. the short range
d. typically one to three months
e. typically one or more years

31. Which of the following is not one of the four things needed for aggregate planning?
a. a logical overall unit for measuring sales and output
b. a method for determining costs, such as hiring, firing, and inventory costs, associated with production schedules
c. a mathematical model that will minimize costs over the intermediate planning period
d. an aggregate demand forecast for an intermediate planning period
e. All of these are needed for aggregate planning.

32. Planning tasks associated with loading, sequencing, expediting, and dispatching typically fall under
a. short-range plans
b. intermediate-range plans
c. long-range plans
d. mission-related planning
e. strategic planning
33. The planning tasks associated with staffing, production, inventory, and sub-contracting levels typically fall under
   a. short-range plans
   b. intermediate-range plans
   c. long-range plans
   d. demand options
   e. strategic planning

34. Which of the following statements about aggregate planning is true?
   a. Advertising/promotion is a way of manipulating product or service supply.
   b. Work station loading and job assignments are examples of aggregate planning.
   c. Overtime/idle time is a way of manipulating product or service demand.
   d. Aggregate planning uses the adjustable part of capacity to meet production requirements.
   e. All of the above are true.

35. Which of the following statements about aggregate planning is false?
   a. Hiring, layoffs, overtime, and subcontracting are methods of manipulating capacity.
   b. Aggregate planning produces a plan detailing which products are made and in what quantities.
   c. Yield management is a way of manipulating product or service demand.
   d. Aggregate planning uses the adjustable part of capacity to meet production requirements.
   e. The transportation method is an optimizing technique for aggregate planning.

36. Disaggregation
   a. breaks the aggregate plan into greater detail
   b. transforms the master production schedule into an aggregate plan
   c. calculates the optimal price points for yield management
   d. converts product schedules and labor assignments to a facility-wide plan
   e. is an assumption required for the use of the transportation model in aggregate planning

37. Dependence on an external source of supply is found in which of the following aggregate planning strategies?
   a. varying production rates through overtime or idle time
   b. subcontracting
   c. using part-time workers
   d. back ordering during high demand periods
   e. hiring and laying off

38. Which of these is among the demand options of aggregate planning?
   a. subcontracting
   b. back-ordering during high-demand periods
   c. changing inventory levels
   d. varying workforce size
   e. All of the above are demand options.
39. Which of the following aggregate planning strategies might direct your client to a competitor?
   a. using part-time workers
   b. subcontracting
   c. changing inventory level
   d. varying production rates through overtime or idle time
   e. varying work force size by hiring or layoffs

40. Which of the following aggregate planning strategies is a "capacity option"?
   a. influencing demand by changing price
   b. counterseasonal product mixing
   c. influencing demand by extending lead times
   d. changing inventory levels
   e. influencing demand by back ordering

41. Which of these aggregate planning strategies adjusts capacity to match demand?
   a. back ordering
   b. using part-time workers
   c. counterseasonal product mixing
   d. changing price
   e. None of the above is a capacity option.

42. Which of the following aggregate planning strategies is known to lower employee morale?
   a. yield management
   b. varying production rates through overtime or idle time
   c. changing inventory levels
   d. varying work force size by hiring or layoffs
   e. back ordering during high demand periods

43. Which of the following is not associated with manipulation of product or service demand?
   a. price cuts or discounts
   b. promotion
   c. subcontracting
   d. counterseasonal products or services
   e. advertising

44. Which of the following attempts to manipulate product or service demand?
   a. inventories
   b. part-time workers
   c. subcontracting
   d. overtime/idle time
   e. price cuts

45. Which of the following aggregate planning strategies is a "demand option"?
   a. changing price
   b. subcontracting
   c. varying production levels
   d. changing inventory levels
   e. using part-time workers
46. In aggregate planning, which one of the following is **not** a basic option for altering demand?
   a. promotion
   b. subcontracting
   c. back ordering
   d. pricing
   e. All are demand options.

47. Which choice below best describes the **counterseasonal** demand option?
   a. producing such products as lawnmowers and sunglasses during the winter
   b. developing a mix of products that smooths out their demands
   c. lowering prices when demand is slack
   d. using subcontractors only when demand is excessive
   e. the breaking of the aggregate plan into finer levels of detail

48. Which of the following statements about aggregate planning is **true**?
   a. The development of mathematical models has allowed aggregate planners to discontinue use of trial-and-error methods.
   b. In aggregate planning, back orders are a means of manipulating supply while part-time workers are a way of manipulating product or service demand.
   c. A pure chase strategy allows lower inventories when compared to pure level scheduling.
   d. Disaggregation turns the master production schedule into an intermediate term master plan.
   e. All of the above are true.

49. Which choice best describes **level scheduling**?
   a. Daily production is variable from period to period.
   b. Subcontracting, hiring, and firing manipulate supply.
   c. Price points are calculated to match demand to capacity.
   d. Inventory goes up or down to buffer the difference between demand and production.
   e. Seasonal demand fluctuations are matched without hirings or layoffs.

50. Which of the following statements regarding aggregate planning is **true**?
   a. In a pure level strategy, production rates or work force levels are adjusted to match demand requirements over the planning horizon.
   b. A pure level strategy allows lower inventories when compared to pure chase and hybrid strategies.
   c. In a mixed strategy, there are changes in both inventory and in work force and production rate over the planning horizon.
   d. Because service firms have no inventory, the pure chase strategy does not apply.
   e. All of the above are true.

51. In level scheduling, what is kept uniform from month to month?
   a. product mix
   b. inventory levels
   c. production/workforce levels
   d. demand levels
   e. sub-contracting levels
52. Which of the following is **not** consistent with a pure level strategy?
   a. varying the use of subcontracting  
   b. variable work force levels  
   c. little or no use of inventory to meet demand requirements  
   d. varying production levels and/or work force to meet demand requirements  
   e. All of the above are inconsistent with the pure level strategy.

53. Which of the following is consistent with a pure chase strategy?
   a. vary production levels to meet demand requirements  
   b. vary work force to meet demand requirements  
   c. vary production levels and work force to meet demand requirements  
   d. little or no use of inventory to meet demand requirements  
   e. All of the above are consistent with a pure chase strategy.

54. Which of the following is **not** an advantage of level scheduling?
   a. stable employment  
   b. lower absenteeism  
   c. matching production exactly with sales  
   d. lower turnover  
   e. more employee commitment

55. A firm uses the pure chase strategy of aggregate planning. It produced 1000 units in the last period. Demand in the next period is estimated at 800, and demand over the next six periods (its aggregate planning horizon) is estimated to average 900 units. In following the chase strategy, the firm will
   a. add 100 units to inventory in the next period  
   b. add 200 units to inventory in the next period  
   c. hire workers to make up the 100 unit difference  
   d. fire workers to make up the 200 unit difference  
   e. implement a lower price point to increase demand

56. A firm's demand in the next four quarters (its aggregate planning horizon) is forecast to be 80, 50, 40, and 90 units. Last quarter, the firm produced 60 units. If it uses level scheduling, the firm will
   a. hire workers to permit production of 65 units per quarter for the next four quarters  
   b. hire 20 workers  
   c. have an increase in inventory of 20 units in the next quarter  
   d. have a decrease in inventory of 5 units in the next quarter  
   e. change its workforce each quarter so that inventory does not change

57. Which of the following actions is consistent with the use of pure level strategy?
   a. use inventory to meet demand requirements  
   b. vary the amount of subcontracting to meet demand requirements  
   c. vary production levels to meet demand requirements  
   d. vary work force to meet demand requirements  
   e. none of the above
58. "An optimal plan for minimizing the cost of allocating capacity to meet demand over several planning periods" best describes
   a. the linear decision rule
   b. simulation
   c. the management coefficients model
   d. the transportation method
   e. graphical or charting methods

59. A firm uses graphing and charting techniques in its aggregate planning efforts. Over the next twelve months (its intermediate period) it estimates the sum of demands to be 105,000 units. The firm has 250 production days per year. In January, which has 22 production days, demand is estimated to be 11,000 units. A graph of demand versus level production will show that
   a. the January requirement is below level production of 420 units
   b. level production is approximately 1000 units per day
   c. level production of 420 units per day is below the January requirement
   d. level production is approximately 420 units per month
   e. the firm must hire workers between December and January

60. A firm practices the pure chase strategy. Production last quarter was 1000. Demand over the next four quarters is estimated to be 900, 700, 1000, and 1000. Hiring cost is $20 per unit, and firing cost is $5 per unit. Over the next year, the sum of hiring and firing costs will be
   a. $500
   b. $2,500
   c. $5,500
   d. $7,000
   e. $12,500

61. Which of the following aggregate planning models is based primarily upon a manager's past experience?
   a. the linear decision rule
   b. simulation
   c. the management coefficients model
   d. the transportation method
   e. graphical or charting methods

62. Which of the following aggregate planning methods does not work if hiring and layoffs are possible?
   a. the linear decision rule
   b. simulation
   c. the management coefficients model
   d. the transportation method
   e. graphical or charting methods
63. Which of the following uses regression to incorporate historical managerial performance into aggregate planning?
   a. transportation method
   b. simulation
   c. linear decision rule
   d. management coefficients model
   e. keiretsu

64. Which of the following is **not** an ingredient for controlling labor cost in services?
   a. close control of labor hours to assure quick customer response
   b. some form of on-call labor resource that can be added or deleted to meet unexpected demand
   c. contract overseas labor for lower wage scale
   d. flexibility of individual worker skills that permits reallocation of available labor time
   e. individual worker flexibility in rate of output or hours of work to meet expanded demand

65. Which of the following statements regarding aggregate planning in services is **false**?
   a. When outputs are intangible, aggregate planning deals mainly with human resources requirements and managing demand.
   b. Perishability of inventory is an important consideration of planning.
   c. Aggregate planning in some service industries can be simpler than in manufacturing.
   d. Labor is the primary aggregate planning vehicle.
   e. Level scheduling is far more common than chase.

66. Aggregate planning for service firms with high-volume tangible output is directed toward
   a. smoothing the production rate
   b. yield management
   c. centralized purchasing
   d. decreasing the demand rate during peak periods
   e. planning for human resource requirements and managing demand

67. Yield management is most likely to be used in which one of the following situations?
   a. a fast food restaurant with wide demand fluctuations during the day
   b. a dental clinic that wants to fill its appointment book
   c. a firm with a good counterseasonal product mix
   d. a shipping company that can change its fleet size easily
   e. an airline attempting to fill "perishable" seats at maximum revenue

68. "Yield management" is best described as
   a. a situation where management yields to labor demands
   b. a situation where the labor union yields to management demands
   c. a process designed to increase the rate of output
   d. capacity allocation to different classes of customers in order to maximize profits
   e. management's selection of a product mix yielding maximum profits
69. Which of these is **not** a characteristic that makes yield management attractive?
   a. demand can be segmented
   b. service can be sold in advance of consumption
   c. capacity is easily changed
   d. variable costs are low and fixed costs are high
   e. demand fluctuates