**Chapter 4: Product and Service Innovations**

**Practice Problems**

**MULTIPLE CHOICE**

1. What are the four stages of the product lifecycle?

|  |  |
| --- | --- |
| a. | Start, Take over, Decline, Death |
| b. | Design, Build, Sell, Close down |
| c. | Introduction, Growth, Maturity, Decline |
| d. | Conceptualization, Engineering, Production, Sales |

ANS: C PTS: 1 DIF: Easy

2. Retinal identification, 3D televisions, and holograms would be examples of what stage of the production lifecycle?

|  |  |
| --- | --- |
| a. | introduction |
| b. | growth |
| c. | maturity |
| d. | decline |

ANS: A PTS: 1 DIF: Medium

3. Smartcards, computer tablets would be examples of what stage of the production lifecycle?

|  |  |
| --- | --- |
| a. | introduction |
| b. | growth |
| c. | maturity |
| d. | decline |

ANS: B PTS: 1 DIF: Medium

4. Credit cards and DVDs would be examples of what stage of the product lifecycle?

|  |  |
| --- | --- |
| a. | introduction |
| b. | growth |
| c. | maturity |
| d. | decline |

ANS: C PTS: 1 DIF: Medium

5. A checkbook is an example of what stage of the product lifecycle?

|  |  |
| --- | --- |
| a. | introduction |
| b. | growth |
| c. | maturity |
| d. | decline |

ANS: D PTS: 1 DIF: Medium

6. What stage of the product lifecycle is characterized by low demand, and an emphasis on generating awareness and flexibility?

|  |  |
| --- | --- |
| a. | introduction |
| b. | growth |
| c. | maturity |
| d. | decline |

ANS: A PTS: 1 DIF: Medium

7. What stage of the product lifecycle is characterized by strong demand, a focus on market share, and the addition of features to the product or service?

|  |  |
| --- | --- |
| a. | introduction |
| b. | growth |
| c. | maturity |
| d. | decline |

ANS: B PTS: 1 DIF: Medium

8. What stage of the product lifecycle is characterized by leveling off of demand, attempts to preserve market share, a focus on lowering costs and profit maximization?

|  |  |
| --- | --- |
| a. | introduction |
| b. | growth |
| c. | maturity |
| d. | decline |

ANS: C PTS: 1 DIF: Medium

9. What stage of the product lifecycle is characterized by the search for new markets, slashing of costs, and the discovery of new uses?

|  |  |
| --- | --- |
| a. | introduction |
| b. | growth |
| c. | maturity |
| d. | decline |

ANS: D PTS: 1 DIF: Medium

10. Which of the following is not a characteristic of successful product development?

|  |  |
| --- | --- |
| a. | meticulous planning |
| b. | luck |
| c. | solid price-value |
| d. | solid understanding of market |

ANS: B PTS: 1 DIF: Easy

11. Which of the following is not an element that contributes to product development failure?

|  |  |
| --- | --- |
| a. | solid understanding of the market |
| b. | bad design |
| c. | mismatch between price and value |
| d. | failure to illustrate benefits to potential customers |

ANS: A PTS: 1 DIF: Easy

12. Which of the following is not a term associated with types of innovation?

|  |  |
| --- | --- |
| a. | sustaining |
| b. | radical |
| c. | reactive |
| d. | incremental |

ANS: C PTS: 1 DIF: Medium

13. A new product or solution associated with products in existing markets is what type of innovation?

|  |  |
| --- | --- |
| a. | sustaining |
| b. | radical |
| c. | reactive |
| d. | incremental |

ANS: B PTS: 1 DIF: Medium

14. An improvement to an already existing product is what type of innovation?

|  |  |
| --- | --- |
| a. | sustaining |
| b. | radical |
| c. | reactive |
| d. | incremental |

ANS: D PTS: 1 DIF: Easy

15. A product or service that takes root initially in simple applications, typically at the low-end of a market and then gains momentum and moves up to the higher-end of the market, eventually displacing established competitors is what type of innovation?

|  |  |
| --- | --- |
| a. | sustaining |
| b. | radical |
| c. | disruptive |
| d. | incremental |

ANS: C PTS: 1 DIF: Medium

16. A strategic, company-wide business approach that covers everything from the origination of the concept for the product, its design, sourcing of its components, testing, manufacturing, delivery, and service to improvements to the product based on how customers responded to it represents what type of planning or management?

|  |  |
| --- | --- |
| a. | strategic planning |
| b. | supply chain management |
| c. | product life cycle management |
| d. | process management |

ANS: C PTS: 1 DIF: Easy

17. Which of the following is not a step in traditional product development?

|  |  |
| --- | --- |
| a. | idea generation |
| b. | business analysis |
| c. | reengineering |
| d. | market testing |

ANS: C PTS: 1 DIF: Medium

18. A method that helps prevent runaway, over-budget product development cycles by dividing projects into *stages* (or *phases*), and *gates* separating consecutive stages is known as what?

|  |  |
| --- | --- |
| a. | rapid prototyping |
| b. | stage-gate approach |
| c. | innovative project management |
| d. | the Logan approach |

ANS: B PTS: 1 DIF: Easy

19. Which step in the stage-gate approach is characterized by evaluation of the technical merits of the product in relation to its potential target market?

|  |  |
| --- | --- |
| a. | scoping |
| b. | build business case |
| c. | development |
| d. | test and validation |

ANS: A PTS: 1 DIF: Medium

20. Which step in the stage-gate approach is most important and most difficult?

|  |  |
| --- | --- |
| a. | scoping |
| b. | build business case |
| c. | development |
| d. | test and validation |

ANS: B PTS: 1 DIF: Hard

21. When a firm dismantles a competitor's existing products to see how they work and whether they can be improved is known as

|  |  |
| --- | --- |
| a. | test and validation |
| b. | market comparison |
| c. | reverse engineering |
| d. | beta testing |

ANS: C PTS: 1 DIF: Easy

22. What is another term for field testing?

|  |  |
| --- | --- |
| a. | test and validation |
| b. | market analysis |
| c. | reverse engineering |
| d. | beta testing |

ANS: D PTS: 1 DIF: Hard

23. An approach in which independently created units called modules can be combined with others and easily rearranged, replaced, or interchanged to create different products is known as

|  |  |
| --- | --- |
| a. | mix and match design |
| b. | robust design |
| c. | modular design |
| d. | rapid prototyping |

ANS: C PTS: 1 DIF: Medium

24. Who is most closely associated with the concept of robust design?

|  |  |
| --- | --- |
| a. | Akao |
| b. | Taguchi |
| c. | Juran |
| d. | Deming |

ANS: B PTS: 1 DIF: Medium

25. What is the correct definition of value?

|  |  |
| --- | --- |
| a. | function - cost |
| b. | function + cost |
| c. | function \* cost |
| d. | function / cost |

ANS: D PTS: 1 DIF: Hard

26. When a company produces jeans that are fitted to each individual customer that is known as

|  |  |
| --- | --- |
| a. | market focus |
| b. | mass customization |
| c. | tailoring |
| d. | target marketing |

ANS: B PTS: 1 DIF: Easy

27. When a company allows an individual customer to select running shoe designs that is known as

|  |  |
| --- | --- |
| a. | market focus |
| b. | mass customization |
| c. | tailoring |
| d. | target marketing |

ANS: B PTS: 1 DIF: Easy

28. Designs that reduce the number of parts in products are identified, making them easier to manufacture and assemble, and less expensive to produce are known as

|  |  |
| --- | --- |
| a. | DFR |
| b. | DFMA |
| c. | QFD |
| d. | DFDRR |

ANS: B PTS: 1 DIF: Medium

29. When product designers determine the parts of a product to be designed for refurbishing and reuse, and the parts to be designed that are to be discarded, broken down, and recycled it is known as

|  |  |
| --- | --- |
| a. | DFR |
| b. | DFMA |
| c. | QFD |
| d. | DFDRR |

ANS: D PTS: 1 DIF: Medium

30. Yogi Akao, the quality pioneer, is most known for his work on

|  |  |
| --- | --- |
| a. | DFR |
| b. | DFMA |
| c. | QFD |
| d. | DFDRR |

ANS: C PTS: 1 DIF: Medium

31. Hoshin Kanri is a form of

|  |  |
| --- | --- |
| a. | total quality management |
| b. | strategic planning |
| c. | design for manufacturing |
| d. | value engineering |

ANS: B PTS: 1 DIF: Medium

32. Which of the following is not a part of the “House of Quality”?

|  |  |
| --- | --- |
| a. | engineering requirements |
| b. | growth rate matrix |
| c. | correlation matrix |
| d. | competitive analysis |

ANS: B PTS: 1 DIF: Easy

33. A new product development approach in which tasks are performed in parallel and every aspect of product development is considered early in the process is known as

|  |  |
| --- | --- |
| a. | TQM |
| b. | QFD |
| c. | process design |
| d. | concurrent engineering |

ANS: A PTS: 1 DIF: Medium

34. Which of the following is not one of the “Houses of Quality”?

|  |  |
| --- | --- |
| a. | engineering requirements |
| b. | parts requirements |
| c. | market requirements |
| d. | production requirements |

ANS: C PTS: 1 DIF: Hard

35. A strategy intended to reduce the time required to conceptualize, develop, manufacture, market, and deliver products so as to gain a competitive advantage is known as

|  |  |
| --- | --- |
| a. | time-based competition |
| b. | value management |
| c. | Hoshin Kanri |
| d. | process design |

ANS: A PTS: 1 DIF: Easy

36. A visual communication tool in which images take the place of the real thing, but the user can still respond interactively is known as

|  |  |
| --- | --- |
| a. | rapid prototyping |
| b. | visual design |
| c. | virtual reality |
| d. | holography |

ANS: C PTS: 1 DIF: Medium

37. A broad range software that helps engineers design new products electronically rather than drawing by hand is known as

|  |  |
| --- | --- |
| a. | computer aided design |
| b. | computer aided engineering |
| c. | visual design |
| d. | virtual reality |

ANS: A PTS: 1 DIF: Easy

38. When spare parts come from the same company that made the whole product they can be referred to as

|  |  |
| --- | --- |
| a. | CAE |
| b. | OEM |
| c. | BRP |
| d. | OCC |

ANS: B PTS: 1 DIF: Medium

39. Rearranging product development personnel can save a company what percent in product development costs?

|  |  |
| --- | --- |
| a. | 2% |
| b. | 5% |
| c. | 10% |
| d. | 25% |

ANS: C PTS: 1 DIF: Hard

40. Where did GE set up their largest R&D center outside of the United States?

|  |  |
| --- | --- |
| a. | Frankfort, Germany |
| b. | Shanghai, China |
| c. | Bangalore, India |
| d. | Singapore |

ANS: C PTS: 1 DIF: Medium

41. What is not a major challenge in global product development?

|  |  |
| --- | --- |
| a. | government regulation |
| b. | failure to understand cultural differences |
| c. | protection of intellectual properties |
| d. | insuring data and software compatibility |

ANS: A PTS: 1 DIF: Medium

42. What is not an issue associated with stock-outs?

|  |  |
| --- | --- |
| a. | customer dissatisfaction |
| b. | higher inventory carrying costs |
| c. | lost sales |
| d. | poor service |

ANS: B PTS: 1 DIF: Medium

43. Which of the following is not an option for the location of inventory?

|  |  |
| --- | --- |
| a. | in transit |
| b. | customer |
| c. | warehouse |
| d. | retail |

ANS: B PTS: 1 DIF: Easy

44. Which of the following is not a component of inventory costs?

|  |  |
| --- | --- |
| a. | purchasing |
| b. | carrying |
| c. | stock-out |
| d. | transportation |

ANS: A PTS: 1 DIF: Medium

45. The total time to produce a product and deliver it after an order has been placed is known as

|  |  |
| --- | --- |
| a. | total production time |
| b. | manufacturing time |
| c. | lead time |
| d. | completion time |

ANS: C PTS: 1 DIF: Easy

46. The order of events, both the flow of information and materials, that are clearly mapped out based on the inputs from all of the firm’s supply chain members is known as

|  |  |
| --- | --- |
| a. | supply chain map |
| b. | supply chain analysis |
| c. | process design |
| d. | product mapping |

ANS: C PTS: 1 DIF: Medium

47. A matrix that establishes the relationship among three key factors of service: the degree of contact between the consumer and the service provider, the opportunity for sales, and the service system’s production efficiency is known as

|  |  |
| --- | --- |
| a. | customer needs matrix |
| b. | process design map |
| c. | total systems matrix |
| d. | service system design matrix |

ANS: D PTS: 1 DIF: Medium

48. Which of the following is not one of the six types of service delivery systems?

|  |  |
| --- | --- |
| a. | face-to-face |
| b. | contact via Internet |
| c. | physical |
| d. | mail |

ANS: C PTS: 1 DIF: Easy

49. Which company, mentioned in the text, engages different independent third-party testing labs to ensure that the food, children's products, apparel, home, and pharmaceutical products that it sells comply with the highest safety standards set by state and federal government statutes?

|  |  |
| --- | --- |
| a. | Wal-Mart |
| b. | John Deere |
| c. | Intel |
| d. | Apple |

ANS: A PTS: 1 DIF: Hard

50. Which of the following is not a type of sustainability?

|  |  |
| --- | --- |
| a. | economic |
| b. | material |
| c. | environmental |
| d. | social |

ANS: B PTS: 1 DIF: Medium