1. Need for Developing Products

1. Why is product development essential in engineering?
   a) To increase production costs
   b) To enhance customer satisfaction
   c) To decrease market competition
   d) To reduce innovation
2. Which of the following is NOT a reason for developing new products?
   a) Changing customer preferences
   b) Technological advancements
   c) Government restrictions on innovation
   d) Competitive advantage
3. What is the key motivation for product innovation?
   a) Higher expenses
   b) Meeting unfulfilled needs
   c) Reducing quality
   d) Eliminating market demand
4. Which factor does NOT drive the need for product development?
   a) Market trends
   b) Environmental concerns
   c) Increasing labor costs
   d) Advancing technologies
5. A major driver for product development is:
   a) Customer complaints
   b) Stagnant technology
   c) Decreasing market share
   d) Increasing product costs
6. Why do companies invest in R&D for product development?
   a) To make older products obsolete
   b) To align with consumer trends
   c) To slow down innovation
   d) To reduce competition
7. What is the primary goal of product design in engineering?
   a) Reducing raw material usage
   b) Enhancing aesthetics only
   c) Creating functional, cost-effective solutions
   d) Making products more complex
8. Market-driven product development focuses on:
   a) Engineering advancements
   b) Customer needs and preferences
   c) Increasing manufacturing costs
   d) Government policies

9. Why do businesses conduct feasibility studies before product development?
    a) To predict product success
    b) To ignore customer needs
    c) To limit production
    d) To increase risks
10. Which of the following is NOT a step in product development?
    a) Market research
    b) Idea screening
    c) Consumer ignorance
    d) Prototyping

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2. Importance of Engineering Design

11. Engineering design is important because:
    a) It ensures product failure
    b) It minimizes innovation
    c) It leads to functional and safe products
    d) It disregards user requirements
12. Which of these is a key objective of engineering design?
    a) To maximize cost
    b) To ensure safety and efficiency
    c) To ignore customer feedback
    d) To focus only on aesthetics
13. Why is testing an essential part of engineering design?
    a) To ensure product reliability
    b) To increase product costs
    c) To make production slower
    d) To decrease innovation
14. What does good engineering design help prevent?
    a) Market expansion
    b) Product failures
    c) Product efficiency
    d) Innovation
15. Engineering design considers:
    a) Only cost factors
    b) Only mechanical aspects
    c) Functionality, safety, and efficiency
    d) None of the above
16. A well-engineered product should:
    a) Break down easily
    b) Be user-friendly and efficient

c) Ignore safety standards
d) Not require testing

17. What is an important factor in designing reliable products?
    a) Ignoring industry standards
    b) Following a structured design process
    c) Avoiding customer feedback
    d) Minimizing research
18. The role of engineering design is to:
    a) Create unsafe products
    b) Solve problems with innovative solutions
    c) Increase the risk of failure
    d) Reduce efficiency
19. Engineering design contributes to:
    a) Higher product recall rates
    b) Better performance and usability
    c) Ignoring industry trends
    d) Decreasing product safety
20. Which is a key principle of good engineering design?
    a) Increasing complexity without reason
    b) Reducing production cost at all costs
    c) Balancing function, cost, and safety
    d) Ignoring user feedback

3. Types of Design

21. Which of the following is NOT a type of design?
    a) Adaptive design
    b) Original design
    c) Evolutionary design
    d) Predictive design
22. What type of design modifies an existing product?
    a) Original design
    b) Adaptive design
    c) Innovative design
    d) Reverse design
23. Which design focuses on creating entirely new concepts?
    a) Variant design
    b) Adaptive design
    c) Original design
    d) Parametric design
24. An example of adaptive design is:
    a) Designing a new type of car engine
    b) Adding a touchscreen to a traditional phone

c) Creating a new software framework
d) Developing a new mathematical theory

25. Variant design mainly involves:
    a) Completely new inventions
    b) Slight modifications to an existing design
    c) No changes at all
    d) Removing existing features
26. Reverse engineering is mainly used for:
    a) Understanding competitor products
    b) Avoiding research
    c) Copying without improvement
    d) Creating new concepts
27. Parametric design relies on:
    a) Trial-and-error
    b) Numerical and geometric relationships
    c) Copying previous designs
    d) Guessing optimal parameters
28. Which type of design is widely used in CAD modeling?
    a) Original design
    b) Parametric design
    c) Random design
    d) Evolutionary design
29. In which design approach are performance parameters adjusted without changing fundamental concepts?
    a) Variant design
    b) Original design
    c) Innovative design
    d) Predictive design
30. The primary focus of innovative design is:
    a) Copying an existing product
    b) Completely rethinking an approach
    c) Minor improvements to an existing product
    d) Using outdated methods

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4. The Design Process

31. The first step in the design process is:
    a) Prototyping
    b) Identifying the problem
    c) Manufacturing
    d) Testing

32. Which stage ensures the feasibility of a product idea?
    a) Testing
    b) Market analysis
    c) Concept evaluation
    d) Deployment
33. A critical part of the design process is:
    a) Customer feedback
    b) Skipping testing
    c) Ignoring cost factors
    d) Avoiding innovation
34. What is the final phase of the design process?
    a) Concept generation
    b) Prototyping
    c) Production and deployment
    d) Market research
35. Prototyping in design is used to:
    a) Finalize the product design
    b) Test and refine ideas
    c) Reduce costs
    d) Eliminate creative thinking
36. Why is iteration important in the design process?
    a) To refine and improve designs
    b) To increase time spent on the project
    c) To limit design creativity
    d) To avoid customer feedback
37. Which phase follows the design concept stage?
    a) Idea generation
    b) Prototyping
    c) Customer evaluation
    d) Testing
38. A well-structured design process ensures:
    a) Increased risk of failure
    b) Consistency and quality
    c) Market rejection
    d) No need for testing
39. Why is brainstorming important in design?
    a) It limits creativity
    b) It encourages diverse ideas
    c) It avoids challenges
    d) It speeds up manufacturing
40. What happens if the design process is skipped?
    a) Increased product failure
    b) Improved product quality

c) Faster market entry
d) Cost savings

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5. Relevance of Product Lifecycle Issues in Design

41. What is the first phase of the product lifecycle?
    a) Growth
    b) Maturity
    c) Decline
    d) Introduction
42. Why should product lifecycle be considered in design?
    a) To reduce sustainability
    b) To plan for product evolution
    c) To ignore market trends
    d) To avoid customer feedback
43. A product enters the maturity phase when:
    a) Sales start declining
    b) It is first introduced
    c) Sales peak and stabilize
    d) It is discontinued
44. In which phase does competition intensify?
    a) Introduction
    b) Growth
    c) Maturity
    d) Decline
45. The decline phase of a product lifecycle is characterized by:
    a) Increasing demand
    b) Rising production costs
    c) Decreasing sales
    d) New product launches
46. Extending a product lifecycle can be done through:
    a) Ignoring customer needs
    b) Continuous innovation
    c) Reducing product quality
    d) Delaying production
47. Which of these is an example of a product reaching its decline stage?
    a) A smartphone model with outdated technology
    b) A newly released electric vehicle
    c) A recently launched gaming console
    d) A growing social media platform
48. Sustainability in product lifecycle design means:
    a) Designing for shorter product lifespan

b) Minimizing environmental impact
c) Increasing production waste
d) Ignoring energy efficiency

49. What is a common strategy during the introduction phase?
    a) Extensive marketing
    b) Reducing product quality
    c) Cutting production costs
    d) Avoiding market research
50. Which phase of the product lifecycle typically requires the highest investment?
    a) Growth
    b) Decline
    c) Introduction
    d) Maturity