POSTAL Book Package 2023

GATE • PSUs

PRODUCTION AND INDUSTRIAL ENGINEERING

Objective Practice Sets

Industrial Engineering

Contents

MADE EASY Publications

1 CHAPTER
Product Design and Development

MCQ and NAT Questions

Q.1 _____ is the development of original products, product improvements, product modifications and new brands through the firm's own R&D efforts.
(a) Idea Generation (b) Concept Testing
(c) Test Marketing (d) New Product Development

Q.2 New Product Development starts with
(a) Marketing Strategy Development
(b) Concept Development and Testing
(c) Idea Screening
(d) Idea Generation

Q.3 Major sources of new product ideas include ____
(a) Internal sources, using company R&D
(b) Creative approaches, using both "method and madness" approaches
(c) Watching and listening to customers
(d) All of the above

Q.4 Designs are periodically modified to
(a) Improve product performance
(b) Strive for zero-based rejection and waste
(c) Make products easier and faster to manufacture
(d) All of the above

Q.5 Life-cycle engineering is also called
(a) Green design (b) Expensive design
(c) Easy design (d) None of the above

Q.6 The life cycle of a product includes
(a) Extraction of Natural Resources
(b) Processing of Raw Materials
(c) Manufacturing of Products
(d) All of the above

Q.7 _____ is a new-product development approach in which one company department works to complete its stage of the process before passing the new product along to the next department and stage.
(a) Simultaneous Product Development
(b) Product Life-Cycle Analysis
(c) Sequential Product Development
(d) Team-based Product Development

Q.8 A detailed version of a new idea stated in a meaningful customer terms is called a _____.
(a) Product Concept (b) Product Proposal
(c) Product Idea (d) Product Movement

Q.9 An attractive idea must be developed into a _____.
(a) Product Concept (b) Test Market
(c) Product Strategy (d) Product Image

Q.10 A _____ is the way consumers perceive an actual or potential product.
(a) Product Idea (b) Product Concept
(c) Product Image (d) Test Market

Q.11 Introducing a new product into the market is called ____
(a) Test Marketing
(b) New Product Development
(c) Experimenting
(d) Commercialization

Q.12 During which stage of new product development is management most likely to estimate minimum and maximum sales to assess the range of risk in launching a new product?
(a) Product Development
(b) Marketing Strategy Development
(c) Business Analysis
(d) Test Marketing

Q.13 In which stage of PLC, the firm faces a trade-off between high market share and high current profit.
(a) Introduction (b) Growth
(c) Decline (d) Maturity

Q.14 In which stage of the PLC, will promotional expenditures be high in an attempt to react to increasing competition?

(d) When the part is machined, the tool, holder, workpiece and work holding device do not interfere with one another.

Q.45 Which of the following is(are) design of manufacturing guidelines for welding of components.

(a) Whenever possible weld together parts of equal thickness.

(b) Locate the welds at areas in design where stresses and or deflections are critical.

(c) Carefully consider the sequence with which parts should be welded together.

(d) Welder or welding machine has unobstructed access to the joint.

■■■■

Answers Product Design and Development

1. (d)	**2.** (d)	**3.** (d)	**4.** (d)	**5.** (a)	**6.** (d)	**7.** (c)	**8.** (a)	**9.** (a)
10. (c)	**11.** (d)	**12.** (c)	**13.** (b)	**14.** (c)	**15.** (c)	**16.** (c)	**17.** (a)	**18.** (b)
19. (b)	**20.** (a)	**21.** (b)	**22.** (d)	**23.** (b)	**24.** (a)	**25.** (b)	**26.** (a)	**27.** (d)
28. (b)	**29.** (b)	**30.** (d)	**31.** (c)	**32.** (c)	**33.** (d)	**34.** (c)	**35.** (c)	**36.** (a)
37. (b)	**38.** (b)	**39.** (d)	**40.** (d)	**41.** (c)				
42. (a, b, c)		**43.** (a, b, c, d)		**44.** (a, b, c, d)		**45.** (a, c, d)		

Explanations Product Design and Development

1. (d)

New Product Development is the development of original products, product improvements, product modifications and new brands through the firm's own R&D efforts.

2. (d)

New Product Development always starts with idea generation regarding new product.

3. (d)

New product ideas major sources can be internal sources, using company R&D, watching and listening to customers and creative approaches, using both "Method and Madness" approaches.

4. (d)

Designs are periodically modified to

(i) Improve product performance.

(ii) Strive for zero-based rejection and waste.

(iii) Make products easier and faster to manufacture.

(iv) Consider new materials and processes that are continually being developed.

5. (a)

The major aim of life-cycle engineering (LCE) is to consider reusing and recycling the components of a product, beginning with the earliest stage : product design.

Life-cycle engineering is also called green design or green engineering.

6. (d)

The life cycle involves consecutive and interlinked stages of a product or a service, from the very beginning to its disposal or recycling and includes the following :

(i) Extraction of natural resources

(ii) Processing of raw materials

(iii) Manufacturing of products

(iv) Transportation and distribution of the product to the customer

(v) Use, maintenance and reuse of the product

(vi) Recovery, recycling and reuse of the components of the product

7. (c)

Sequential Product Development is a new-product development approach in which one company department works to complete its stage of the process before passing the new product along to the next department and stage.

8. (a)

Product Concept is a detailed version of a new idea stated in a meaningful customer terms.

9. (a)

An attractive idea must be developed into a product concept.

10. (c)

A Product Image is the way, consumers perceive an actual or potential product.

11. (d)

Introducing a new product into the market is called Commercialization.

12. (c)

In Business-Analysis stage, management estimate the minimum and maximum sales to assess the range of risk in launching a new product.

13. (b)

In growth stage of PLC, the firm faces a trade-off between high market share and high current profit.

14. (c)

In growth stage of the PLC, promotional expenditures will be very high in an attempt to react to increasing competition.

15. (c)

Most products in the market place are in the maturity stage of the product life cycle.

16. (c)

In maturity stage of PLC, marketing managers face strong challenges to sustain the product in the market.

17. (a)

A customer-centred, team-based, systematic approach is necessary for successful new-product development.

18. (b)

An underestimated market size can not be a potential cause of the failure of a new product.

19. (b)

Product Image cannot be described by the PLC Concept.

20. (a)

The advantages of standardizing an international products are :

(i) Lower product design costs
(ii) The development of a consistent image
(iii) Lower marketing costs
(iv) Decreased manufacturing costs

21. (b)

Value engineering is the cost reduction technique in comparison to the worth of a product.

22. (d)

Value analysis examines the

(i) Design of every component
(ii) Method of manufacturing
(iii) Material used

23. (b)

Generally, value analysis is applied to old products.

24. (a)

Value can be defined as the combination of efficiency, quality, service and price which ensures the ultimate economy and satisfaction of the customer.

25. (b)

$$\text{Value} = \frac{\text{Worth to you (Function)}}{\text{What you pay (Cost)}}$$

26. (a)

Value analysis is a remedial process.

27. (d)

Value analysis should be applied when rate of return on investment is reducing, reduction in sales of the product is happening and firm is unable to meet delivery promises.

28. (b)

The price paid by the buyer is called Use Value.

29. (b)

The cost incurred by the manufacturer beyond use value is called esteem value.

30. (d)

Value engineering can be applied in construction area, manufacturing area and in any process.