BRAINWARE UNIVERSITY

Term End Examination 2024-2025
Programme – Dip.ME-2022
Course Name – Product Design
Course Code - DMEOE601B
(Semester VI)

Full Marks : 60 **Time : 2:30 Hours**

[The figure in the margin indicates full marks. Candidates are required to give their answers in their own words as far as practicable.]

Group-A
(Multiple Choice Type Question) 1 x 15=15

1. *Choose the correct alternative from the following :*

(i) Identify the primary objective of product development.
a) Maximizing marketing efforts
b) Designing and launching new products
c) Reducing customer interactions
d) Increasing employee retention

(ii) Identify the department responsible for defining market segments in product development.
a) Manufacturing
b) Marketing
c) Design
d) Finance

(iii) Select the primary goal of prototyping in product design.
a) Reducing customer engagement
b) Testing and refining product functionality
c) Eliminating production steps
d) Avoiding material selection

(iv) Choose the advantage of iterative concept development.
a) Reducing the number of design iterations
b) Enhancing concept evaluation and refinement
c) Avoiding customer feedback
d) Increasing production costs

(v) Identify the key aspect of product quality.
a) Customer satisfaction and reliability
b) Low manufacturing cost
c) Quick development time
d) Reduced workforce

(vi) Select the most critical element in identifying customer needs.
a) Personal assumptions
b) Market research and feedback
c) Ignoring competitors
d) Cutting production costs

(vii) Identify a key aspect of sequential monadic testing.
a) Focusing only on one concept
b) Avoiding order bias
c) Testing all concepts with the same respondents
d) Eliminating multiple evaluations

(viii) Select the key consideration when clustering elements in a schematic.
a) Geometric integration
b) Cost optimization

c) Market trends
d) Branding strategy

(ix) Select the impact of modularity on manufacturing.

a) Simplifies production
b) Complicates assembly
c) Reduces standardization
d) Limits scalability

(x) Predict the effect of reducing the number of parts in assembly.

a) Increases cost
b) Simplifies production
c) Complicates quality control
d) Reduces reliability

(xi) Choose the correct impact of standardization in design.

a) Reduces inventory complexity
b) Increases tooling cost
c) Limits manufacturing flexibility
d) Complicates sourcing

(xii) Choose the significance of datum features in design.

a) Improves measurement accuracy
b) Increases part cost
c) Reduces tolerance needs
d) Complicates assembly

(xiii) Choose the application of robust design in minimizing product variation.

a) Increasing manufacturing costs
b) Avoiding changes in production
c) Reducing impact of noise factors
d) Process standardization

(xiv) Choose the importance of process mapping in industrial design.

a) Customer interactions
b) Interviewing customers
c) Customer personas
d) Journey mapping

(xv) Identify the essential features of a customer-centric product development approach.

a) Product placement
b) User surveys
c) Optimized workflow
d) Crowdsourced feedback

Group-B
(Short Answer Type Questions) 3 x 5=15

2. Describe the role of marketing in product development. (3)
3. Explain the phases of the generic product development process. (3)
4. Define product architecture in terms of functional and physical elements. (3)
5. Explain the role of component standardization in product design. (3)
6. Analyze the advantages of integrating CAD, CAE, and CAM tools in the design process. (3)

OR

Evaluate the effectiveness of robust design in minimizing product variations. (3)

Group-C
(Long Answer Type Questions) 5 x 6=30

7. Evaluate the effects of automation on manufacturing efficiency. (5)
8. Explain the importance of structured approaches in concept generation. (5)
9. Describe the influence of industrial design factors on product design. (5)
10. Describe the role of engineering design in product development and innovation. (5)
11. Analyze the steps involved in analyzing cause-and-effect relationships in product design. (5)
12. Criticize the role of concept testing in refining product ideas before market launch. (5)

OR

Compare the trade-off between differentiation and commonality in platform planning. (5)

****