



B.E DEGREE EXAMINATIONS: APRIL/MAY 2016

(Regulation 2013)

Sixth Semester

MECHANICAL ENGINEERING

U13GST006 : Product Design and Development

Time: Three Hours

Maximum Marks: 100

Answer all the Questions:-

PART A (10 x 1 = 10 Marks)

1. is an example for High risk products.
 - a) Space system
 - b) Automobiles
 - c) Consumer electronics
 - d) Software
2. The number of activities involved in concept development process is.....
3. Which method is used for establishing engineering specifications?
 - a) Kano diagram
 - b) Pugh method
 - c) Brainstorming
 - d) Value analysis
4. The needs apply only to a smaller market segment within the entire buying population is
5. Which of the following logical method used for concept generation?
 - a) Theory of Inventive Problem Solving
 - b) Syntectics
 - c) Story Boarding
 - d) Gallery method
6. Simulation is a tool used for during testing of concept.
7. combines several standard components together through the web of modules.
 - a) Sectional modularity
 - b) Mix modularity
 - c) Bus modularity
 - d) Slot modularity
8. All the sub functions of a product map to a single physical element is called as
9. Gantt chart is used for.....
 - a) Routing
 - b) Planning
 - c) Scheduling
 - d) Dispatching
10. Prototype is an example for

PART B (10 x 2 = 20 Marks)
(Answer not more than 40 words)

11. Compare product design and product development.
12. What is meant by the term Technology Push Products?
13. List out different type of customer needs.
14. What are the steps involved in establishing target specifications?
15. How concept testing differs from concept selection process?
16. Mention the various information sources used for concept generation.
17. What are the main elements involved in determining a manufacturing cost of a product?
18. Specific the various ergonomics needs of a typical product.
19. What are the steps involved in economic analysis of a product development project?
20. List out the guidelines to be followed in selecting the team members for managing projects.

PART C (5 x 14 = 70 Marks)
(Answer not more than 400 words)

Q.No. 21 is Compulsory

21. Explain in detail about six phases of generic product development process and their functions with a neat sketch.

22. (a) (i) Discuss about various methods of gathering customer needs. (7)
(ii) How Affinity diagram useful in grouping of customer needs? Discuss briefly. (7)

(OR)

- (b) Explain in detail about House of Quality approach for establishing engineering specification with an example.

23. (a) Explain about different intuitive methods of concept generation process with a neat sketch.

(OR)

- (b) What are the steps involved in concept selection process? Explain in detail about “Pugh” concept selection method with an example.

24. (a) Explain in detail about different types of product modularity with an example.

(OR)

- (b) (i) Briefly discuss about the steps involved in industrial design process. (7)
(ii) What are the steps involved in Design for Manufacturing process? Discuss briefly with a neat sketch. (7)

25. (a) Explain about different types of prototype with an example. Also discuss the various uses of it.

(OR)

- (b) (i) What are the key factors influencing the profitability of product development process? Discuss briefly. (7)
- (ii) Discuss about three types of task and their dependencies with an example. (7)
