KUMARAGURU
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Register Number:……..

B.E DEGREE EXAMINATIONS: NOV/DEC 2014

(Regulation 2009)

Seventh Semester

MECHANICAL ENGINEERING

MEC135: Modern Concepts of Engineering Design

Time: Three Hours **Maximum Marks: 100**

Answer all the Questions:-

PART A (10 x 1 = 10 Marks)

1. R&D and engineering first produce the product concept into a physical product during which of the following stages of the process?
   a) Concept development and testing
   b) Marketing strategy
   c) Business analysis
   d) Product development
2. New product planning and development are vital today if customers are to be satisfied. This is particularly true because:
   a) Consumer needs are constantly changing
   b) Many competitors quickly copy successful products that can neutralise an innovative product's advantage
   c) Rapid technological advances can quickly make some products obsolete
   d) All of the above
3. The first stage of the new product development process is:
   a) Business analysis
   b) Test marketing
   c) Prototype development
   d) Generating new product ideas
4. The delay between the initiation of a new product idea and the eventual new product launch is known as:
   a) Manufacturing
   b) Spare time
   c) Wasted time
   d) Lead time
5. _____ is new-product idea in order to spot good ideas and drop poor ones as soon as possible.
   a) Idea generation
   b) Concept development and testing

c) Idea screening
d) marketing strategy

6. Which of the following would be a key success factor in developing new products?
   a) a well-defined product concept
   b) a product priced well below market or industry standards
   c) a product that appeals to the late majority
   d) a product that can be sold over the Internet with a minimum of explanation
7. Designing an initial marketing strategy for a new product based on the product concept is called:
   a) Screening
   b) Business analysis
   c) Product development
   d) Marketing strategy development
8. _____ is the way consumers perceive an actual or potential product.
   a) product idea
   b) product image
   c) product concept
   d) product feature
9. To create successful new products, a company must understand consumers, markets, and competitors and:
   a) Develop a great advertising campaign.
   b) have a strong web site to push the product.
   c) Adopt a push rather than pull promotional concept.
   d) develop products that deliver superior value to consumers.
10. The stage in the new-product development process in which the anticipated sales, market share, and profit goals for the first few years are described is called
   a) idea generation
   b) marketing strategy development
   c) Concept development and testing
   d) product development.

PART B (10 x 2 = 20 Marks)

11. What are the applications of CAE?
12. Define morphology of design.
13. What is pre project planning?
14. What is product specification?
15. What is customer survey format?
16. What is concept screening?
17. What are the basic principles of prototyping?
18. What do you understand by the term product architecture?
19. What is the difference between a design patent and a utility patent?
20. List out the steps involved in preparing disclosure for patent.

PART C (5 x 14 = 70 Marks)

21. a) Explain the technological changes that may result from the integration of emerging technologies into new products or systems.

(OR)

b) Discuss societal considerations in design phase with a suitable example.

22. a) Explain about target specification for product planning.

(OR)

b) Discuss the project resource allocation in detail.

23. a) Describe how designers may utilize new technologies when evaluating and marketing their products.

(OR)

b) What are the channels of gathering information from customers for a new product development? How do you analyze and interpret the customer response?

24. a) Explain the various steps involved in the Design for Manufacture (DFM) process.

(OR)

b) Explain the following in detail.

(i) Impact of industrial design on product development.

(ii) Prototyping technologies.

25. a) How is robust design used to ensure quality? Describe the steps involved in the robust design process?

(OR)

b) Explain the various steps involved in the economic analysis process.

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