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Question Paper Code : 61652

M.E. DEGREE EXAMINATION, MAY/JUNE 2014.

Second Semester

Product Design and Development

PD 9221/PD 921/10222 CD 204 — INTEGRATED PRODUCT DESIGN AND
PROCESS DEVELOPMENT

(Common to M.E. CAD/CAM)

(Regulation 2009/2010)

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Give two generic procedure for integrating customer requirements in product design
2. How does a simultaneous engineering concept help in product design?
3. List down the techniques used to bench mark the different methods of concept generation.
4. Define pugh concept selection
5. What is meant by fundamental and incidental interactions?
6. Does aviation industry have product architecture?
7. Define robust design with an example.
8. What is the role of Computer technologies in product development?
9. Define DFA index of a product.
10. Suggest potential cost reduction modifications for a baby toy.

PART B — (5 × 16 = 80 marks)

11. (a) Can the process of identifying customers needs lead to the creation of innovative products concepts? Justify your answer. (16)

Or

- (b) (i) Discuss the different method of identifying the customer needs. (4)
- (ii) Consider the case of bicycle. Identify the needs the developers have missed. Why do you think these needs were not met? Do you think the developers deliberately ignored these needs? (12)

12. (a) (i) Consider the example of choosing the appropriate technology for developing smart class rooms Propose the set of selection criteria.(8)
- (ii) Describe how a large group can participate in the concept selection process. (8)

Or

- (b) (i) How might you use the concept selection method to decide whether to offer a single product to the market place or to offer several different products options? (8)
- (ii) Consider the example of a four wheeler and describe how product features are standardized and the presence of optional add on features. (8)
13. (a) (i) Explain how product architecture can be incorporated in service industries such as hospital and universities. (8)
- (ii) With examples show that firms cannot achieve high product variety without a modular product architecture. (8)

Or

- (b) (i) Discuss how a product architecture differ for a product developed for an economically lower segment of market vis-a-vis the same product developed for upper segment of market. (8)
- (ii) Consider a synchronous motor - draw a schematic including the essential functional elements. Identify two possible clustering of these elements into chunks. Is there any evidence to suggest which architecture is chosen? (8)
14. (a) (i) Discuss the influence of industrial design process on the marketability of a product. Provide one example for increase and decrease in product cost on incorporating industrial design concepts in the product. (10)
- (ii) What types of product do not benefit from Industrial design involvement in the development process? (6)

Or

- (b) (i) Develop several concepts sketches of an table lamp, using Inside out' and 'outside in' concept. (8)
- (ii) Give two examples of Indian companies which has a strong corporate identity Also explain which aspect of their products helped to identify this identity. (8)
15. (a) The automobile industry is facing crisis with the reduced sales of the vehicle. As a product development engineer, suggest methods to cut the production cost, which could improve the market share at the product. (16)

Or

- (b) (i) Explain how product modularity and part standardization helps in cutting cost. (8)
- (ii) Who can one determine the really cost of a product once it is put into production? (8)