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B.E / B.Tech (Full Time) DEGREE END SEMESTER EXAMINATIONS, APRIL / MAY 2013

MANUFACTURING ENGINEERING

Eighth Semester

MF 9021 PRODUCT DESIGN AND DEVELOPMENT

(Regulation 2008)

3

Time: 3 Hours

Answer ALL Questions

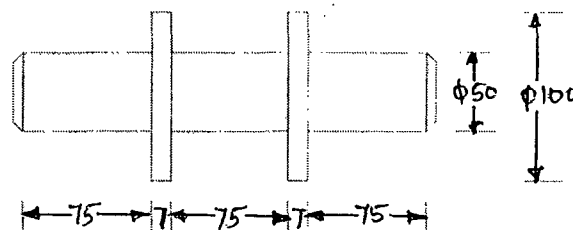
Max. Marks 100

PART-A (10 x 2 = 20 Marks)

1. A 'Connecting rod' and 'bank term-deposit' can be compared as 'Products'. TRUE or FALSE? Explain.
2. List the needs for 'product development' to be continued for a current successful product
3. Explain how a customer statement about a mechanical screw driver can be interpreted as 'Need'.
4. What is known as 'product specification'?
5. Draw a competitive map used to arrive at product specifications
6. Discuss on any one of the guidelines useful for improving both individual and group internal search for concept generation.
7. Can a firm achieve high product variety without a modular product architecture? How (or why not)?
8. With your own example, explain the term 'chunk' in product architecture
9. 'Industrial Design' is towards 'Design of industry' – give your comment
10. Prepare a bill of materials for a bicycle.

PART – B (5 x 16 = 80 Marks)

11. Make a detailed analysis on Design for manufacturing of the given component.



Material: structural steel

All dimensions are in mm

Daily demand: 240 units per day.

(16)

12. (a).(i). Discuss on the challenges of product development (8)
(ii). Draw the flow diagram of product planning process and explain with suitable examples. (8)

(OR)

- (b). (i). Make a detailed note on the art of eliciting customer needs data (8)
(ii). Develop a technical model of a food mixer to assess its technical feasibility (8)

13. (a).(i). Prepare a standard concept generation method by a chart and explain (8)
(ii). Carry out the process of 'Concept Scoring' for a proposed new model of laser printer. (8)

(OR)

- (b). (i). What are the different ways by which concepts are communicated? Discuss on them. (8)

- (ii). Explain any four survey formats commonly used in concept testing. (8)

14. (a).(i). Draw a schematic for a wristwatch, using only functional elements and describe the architecture. (8)

- (ii). Prepare an incidental interaction graph for an inkjet printer and explain. (8)

(OR)

- (b). (i). Tabulate and explain the role of industrial design according to product type. (8)

- (ii). Discuss on any four categories for evaluating the quality of industrial design of a product of your own choice (8)

15. (a).(i). Explain, with graphical representation, the types of prototypes used in PDD (8)

- (ii). Discuss on the method of stereolithography based prototyping. Highlight its advantages and limitations. (8)

(OR)

- (b).(i). Make note on the economic analysis process in PDD. (8)

- (ii). What is known as 'sensitivity analysis' in product development economics? Explain (8)