

**College of Engineering, Pune**  
**END SEMESTER EXAM**  
**Year (B.Tech Production)**

(PE-457)- (Product Design and Manufacture)  
AY-2012-13

Duration – 03 Hrs

Max. Marks-50

Date - 24-11-2012

Instructions:

1. Attempt any **FIVE** questions.
2. Figures to right indicate full marks.
3. Draw neat figures wherever required.
4. Assume suitable data if necessary

- Q.1 A. Classify the product on the basis of Nature of design. 2
- B. "Primitive statements enable the generation of more ideas than specific statements" Justify. 3
- C. What are the three specific sources through which designer can gather information for imparting feature of Convenience of use in Product? 5
- Q.2 A. A gear train has to be designed. Considering a motor high speed low torque driver and input torque progressively increased through the gear train to the output shaft. As a designer suggest the suitable parameters to achieve balanced design for gear train. 3
- B. Explain Rigidity based design with typical example. 2
- C. What are the general producibility requirements for design of machine parts and machining techniques? 5
- Q.3 A. Explain Principle of Elimination with suitable example. 2
- B. For the component shown in Fig-1 suggest the least design modification to minimize tooling set up 3

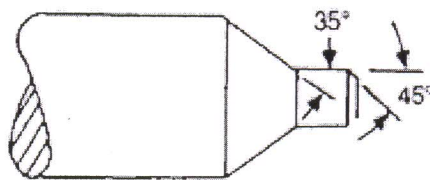


Fig-1

- C Explain Design for Manufacturing methodology. 5
- Q.4 A What is "Black Box" component procurement 2
- B. Differentiate optimization by evolution and optimization by intuition. 3
- C. In terms of profit and competitiveness of product in market. Which are the major strategies an organization can try? Explain 5

- Q.5 A. As a Designer what are the suggestions would you recommend to design product for mistake proofing. 3
- B. List out major ten aspects of manufacturing operations which will lower the cost of product. 2
- C. The annual fixed cost of product are known to be Rs.3,00,000 & the annual net profit is 50,000 the average monthly sale is 920 units. The new design is introduced, involving an expenditure for preparations is Rs.1,00,000 to be returned in two years. It is expected that with new production methods the profit volume ratio may be increased by 5 percent. What should be the annual sales figure for the new design, so that the same net profit will be realized and if a yield of 9% on the capital invested on new product will be obtained? 5
- Q.6 A. What are the assumptions for role of human factors in Product or equipment design is considered. Explain in brief. 3
- B. Normal degree of value is considered bad, if the product value is elevated, competition wise than cost wise. Justify. 2
- C. What is the role of Information step in Value Analysis job plan? 2
- D. Explain the philosophy of concurrent Design. 3

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