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P.E.S. College of Engineering, Mandya - 571 401
(An Autonomous Institution affiliated to VTU, Belgaum)
Seventh Semester, B.E. - Industrial and Production Engineering
Semester End Examination; Dec - 2016/Jan - 2017
Product Design and Manufacturing

Time: 3 hrs

Max. Marks: 100

Note: Answer FIVE full questions, selecting ONE full question from each unit.

UNIT - I

- 1 a. Discuss in detail, effectively explain the essential factors of product design. 10
 b. With the help of a flow chart, explain feasibility steady phases of Asimow's primary design. 10
 2 a. Explain the role of allowance, process capability and tolerance in detailed design and assembly. 10
 b. With a help of a flow chart, explain the detailed design phase involved in primary design. 10

UNIT - II

- 3 a. List and explain the different product strategies required for an organization. 10
 b. Explain in detail, the concepts of 3's required for product design. 10
 4 a. Explain the basic design considerations in product planning. 10
 b. Explain the following concepts of product design :
 i) Strength based design 10
 ii) Impact based design.

UNIT - III

- 5 a. Enumerate the aspects considered in design of forging components with simple sketches. 10
 b. Explain with a neat sketch, the design recommendations for pressed components. 10
 6 a. Explain the producibility requirements meant for design of machine parts with simple sketches. 10
 b. Explain with a neat sketch, the design considerations of powder metallurgical parts. 10

UNIT - IV

- 7 a. Define optimization. Explain Siddal's classification of design approaches. 10
 b. Write a brief note on the following :
 i) Linear Programming 10
 ii) Johnson's method of optimum design.
 8 a. Explain the ten aspects of manufacturing operations that will lower the cost of products. 10
 b. Write a brief note on the following :
 i) Design for safety 10
 ii) Design for Reliability.

UNIT - V

- 9 a. Define the term Anthropometry. Explain the importance of Anthropometry aismen as occupant of space with simple sketches. 10
- b. Write a brief note on the following :
- i) Design of controls 10
 - ii) Design of displays.
- 10 a. Explain in detail, the steps involved in value analysis job plan. 10
- b. Define creativity. Explain the different creative techniques for product design. 10

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