

Z 6052

M.E. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2006.

Second Semester

Engineering Design

CD 1721 — DESIGN FOR MANUFACTURE, ASSEMBLY AND ENVIRONMENTS

(Common to M.E. Computer Aided Design and M.E. CAD/CAM)

(Regulation 2005)

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Define Cp and Cpk value.
2. Briefly explain Worst Case System (WCS) of Tolerance Stack.
3. State any two design rule to facilitate are welding.
4. Write the expression for Design For Assembly (DFA).
5. What is the need for Design for Manufacturable or Recyclable?
6. Define form Design.
7. Explain PDCA cycle.
8. What are the design guidelines for clampability?
9. Draw the sketch of Top Gating.
10. Write the meaning of the term Poka-Yoke.

PART B — (5 × 16 = 80 marks)

11. (a) (i) Differentiate Dimensional Tolerance from Form Tolerance. (6)
(ii) Explain with a suitable example (1) Circularity from tolerance
(2) runout tolerance and compare them. (10)

Or

- (b) Explain the steps involved in determining the Process Capability and how does it help to achieve tolerance. (16)
12. (a) Discuss the choice of material selection and explain how this selection influences the form design. (16)

Or

- (b) Discuss the design guidelines for form design of forgings. (16)
13. (a) Describe the concept of Simplification by separation and simplification by amalgamation with an example. (16)

Or

- (b) (i) Write the principle of clamping for machining. (8)
(ii) Explain how 3-2-1 location principle helps in establishing datum feature. (8)
14. (a) Briefly discuss the philosophy of Group Technology. Application of GT concept facilitates better design of Manufacturing system. Justify. (16)

Or

- (b) Write short notes on Reengineering and Redesign. Explain with a case, application redesign in casting. (16)
15. (a) Write short notes on Design for Energy efficiency and design for Disassembly. (16)

Or

- (b) List out the various regional and local issues in the Basic design for environments and explain them in detail. (16)