Question Paper Code : **71087**

M.E. DEGREE EXAMINATION, JUNE/JULY 2013.

Elective

CAD/CAM

CC 9251/CC 951/10222 CDE 21 – COMPUTER AIDED PROCESS PLANNING

(Common to M.E. Computer Integrated Manufacturing)

(Regulation 2009/2010)

Time : Three hours   Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1.   What is the basis for forming groups in group technology?

2.   List any four problems commonly encountered in the planning and control of production.

3.   What is the need for homogenous representation in performing geometric transformations?

4.   Distinguish between tolerance analysis and tolerance synthesis.

5.   Specify the typical rules for selecting the clamping surface.

6.   Distinguish between forward and backward planning.

7.   Mention any four disadvantages of the direct time study adopted in CAPP.

8.   Illustrate a family comprising two parts that can be grouped by processing methods.

9.   What are the characteristics of the hybrid approach to develop process plans?

10. Mention four possibilities for report generation of process plans.

PART B — (5 × 16 = 80 marks)

11. (a)   Explain the various stages involved in the manufacturing of a product in a concurrent engineering environment.

Or

     (b)   Explain the issues involved in the selection of machine tools and cutting tools in performing computer aided process planning.

12. (a) (i) Obtain the transformation matrices for orthographic projection. (5)

(ii) Rotate the rectangle formed by points P_0 (1,1), P_1 (2, 1), P_2 (2, 3), P_3 (1, 3) by 30° CCW about the point S(3,2) using transformation matrices. (11)

Or

(b) Explain in detail the structure of the OPITZ system for parts classification and coding.

13. (a) Describe the methods involved in set up planning. Explain the method of determining the number of set ups in a Chuck only' component.

Or

(b) What is a pocket with respect to process planning? Explain the steps involved in pocket identification procedure considering an example rotating part.

14. (a) Discuss the role of decision tables, decision trees and artificial intelligence in implementing CAPP.

Or

(b) (i) Briefly explain the benefits of CAPP. (5)

(ii) Explain the information flow in a retrieval type computer aided process planning system. Specify the four options provided in MIPLAN system to create the process plan and the subsequent generation of route sheet. (11)

15. (a) Explain the framework of an integrated process planning system with the aid of schematic diagrams.

Or

(b) Describe the data structure and communication methods adopted in totally integrated process planning systems.

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