

M.E. / M.Tech. - DEGREE EXAMINATIONS, NOV / DEC 2025

First Semester

M.E. - CAD / CAM

24PCDPC102 - COMPUTER AIDED TOOLS FOR MANUFACTURING

Regulations - 2024

Duration: 3 Hours

Max. Marks: 100

PART - A (MCQ) (10 × 1 = 10 Marks)

Answer ALL Questions

	<i>Marks</i>	<i>K- Level</i>	<i>CO</i>
1. In manufacturing, forming process involves (a) Addition of material (b) material removal (c) joining of two metals (d) plastic deformation of materials	1	K1	CO1
2. Cellular manufacturing aims to (a) increase batch size (b) random layout (c) reduce setup time (d) reduce batch size	1	K1	CO1
3. Process planning involves (a) product design (b) determining manufacturing sequence (c) tool design (d) quality assurance	1	K1	CO2
4. D-CLASS stands for (a) Design Classification (b) Database Classification (c) Direct Class System (d) Decoding Classification	1	K1	CO2
5. Surface finish is measured in (a) mm (b) μm (c) cm (d) inch	1	K1	CO3
6. Which of the following are non-optical inspection device used in computer aided inspection? (i) ultrasonic testing (ii) X-ray inspection (iii) CT scanners (a) (i) and (ii) only (b) (ii) and (iii) only (c) (i) and (iii) only (d) (i), (ii) and (iii)	1	K1	CO3
7. Digitizing converts (a) code to text (b) physical to digital data (c) digital to analog (d) 2D to 1D data	1	K1	CO4
8. Solid models represent (a) only external surface (b) complete 3D volume (c) 2D profiles (d) either 2D or 3 D profile.	1	K1	CO4
9. Software recycling means (a) deleting old files (b) reusing existing software code (c) creating new software (d) modifying the existing software code	1	K1	CO5
10. Version control is used to (a) track software and design changes (b) modify material (c) control speed of machines (d) simulate the design	1	K1	CO5

PART - B (12 × 2 = 24 Marks)

Answer ALL Questions

11. Define joining process in manufacturing.	2	K1	CO1
12. Summarize the objectives of tool path verification in CAM.	2	K2	CO1
13. Interpret the key functions of process planning in CAD/CAM.	2	K2	CO2
14. List few criteria for selecting CAPP system.	2	K1	CO2
15. Define tolerance accumulation.	2	K1	CO3
16. Describe why tolerance analysis is important.	2	K2	CO3

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| 17. List the tasks involved in reverse engineering of software. | 2 | K1 | CO4 |
| 18. Differentiate between surface and solid modelling. | 2 | K2 | CO4 |
| 19. What are renewable software components? | 2 | K1 | CO5 |
| 20. Show the role of data backup in reverse engineering. | 2 | K2 | CO5 |
| 21. Define domain analysis. | 2 | K1 | CO4 |
| 22. Infer the key aspects of production control in CAD/CAM. | 2 | K2 | CO1 |

PART - C (6 × 11 = 66 Marks)

Answer ALL Questions

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| 23. a) Examine the necessity of 'Tool Path Verification' and describe one method used for this process. | 11 | K4 | CO1 |
| OR | | | |
| b) Compare and contrast the 'Forming' and 'Deforming' manufacturing processes with examples. | 11 | K4 | CO1 |
| 24. a) Build an architecture of computer aided process planning (CAPP) for the sheet metal cutting and demonstrate the system. | 11 | K3 | CO2 |
| OR | | | |
| b) Apply the concept of DCLASS system in detail. | 11 | K3 | CO2 |
| 25. a) Apply the principle of geometric tolerances in design, drafting and manufacturing with an appropriate example. | 11 | K3 | CO3 |
| OR | | | |
| b) Construct a block diagram of computer aided quality control for the inspection of engine piston and demonstrate the inspection processes. | 11 | K3 | CO3 |
| 26. a) Demonstrate the tools and techniques used in reverse engineering. | 11 | K2 | CO4 |
| OR | | | |
| b) Illustrate the use of coordinate measuring machine (CMM) for surface and feature capturing. | 11 | K2 | CO4 |
| 27. a) Analyze the various strategies for the effective data management of reverse engineering. | 11 | K4 | CO5 |
| OR | | | |
| b) Select suitable tools for 3D and CAD applications and examine the design of experiment for evaluating the tools for the said applications. | 11 | K4 | CO5 |
| 28. a) Survey how the digitized data can be used for the construction of surface and solid models for a structural application. | 11 | K4 | CO4 |
| OR | | | |
| b) Test for the application of reverse engineering helps in product redesign and improvement. | 11 | K4 | CO4 |