



B.E / B.Tech (Full Time) DEGREE END SEMESTER EXAMINATIONS, NOV/DEC 2012

MECHANICAL ENGINEERING

SIXTH SEMESTER

ME 9354 – Computer Aided Design & Manufacturing

(REGULATION 2008)

21

Time : 3 hr.

Max. Mark :100

Answer ALL Questions

Part A (10 x 2 = 20 Marks)

- 1 What are the drawbacks of sequential engineering in handling design change requests?
- 2 What is concatenated matrix?
- 3 State the principle of finite element modeling and analysis for the optimized design of mechanical components.
- 4 What are the advantages of Bezier Curves over Hermite cubic curves?
- 5 Describe the structure of an IGES file.
- 6 What G code do you use to machine sharp corners?
- 7 List how the computer networking facilitated planning operations in engineering manufacture.
- 8 What is the difference between absolute and incremental programming?
- 9 Distinguish between the dimensional and geometric tolerance.
- 10 What is the role of world wide web in product development.

PART B (5 x 16 = 80 Marks)

- 11
 - i) Using the line drawing algorithm sketch the pixels for the line drawn from (4,4) to (12, 14). (10)
 - ii) Discuss the stages in the product life cycle and the importance of each stage. (6)

12a Let $b_0(1, 0)$, $b_1(2, 3)$, $b_2(5, 4)$, and $b_3(2, 1)$ be the control points of a cubic Bézier curve $B(t)$. Determine $B(t)$, $B(0)$, $B(0.5)$, and $B(1)$. (16)

[OR]

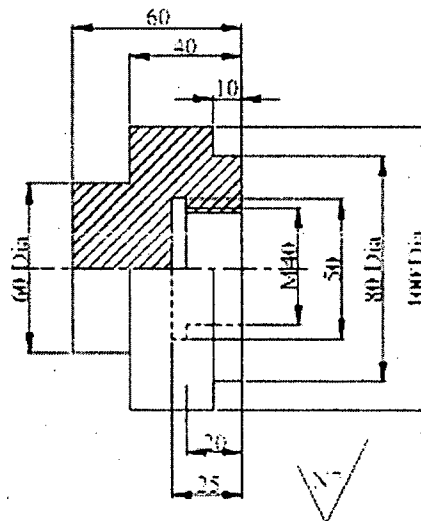
- 12b i) Describe the importance of curve and surface modeling in computer aided graphics and design. (10)
- ii) Briefly describe atleast 3 techniques of solid modeling. (6)

13a Explain the modular structure of a generative CAPP system and list their advantages. (16)

[OR]

- 13b (i) What are the objectives of computer aided quality control? Briefly write the important benefits of computer-aided quality control. (8)
- (ii) Discuss how group technology is used in designing manufacturing cells. (8)

14a Define the process, plan the set up and fixtures, select the tools, prepare the operation sheets and write/create NC programs for the components given below: (16)



Material: Aluminium

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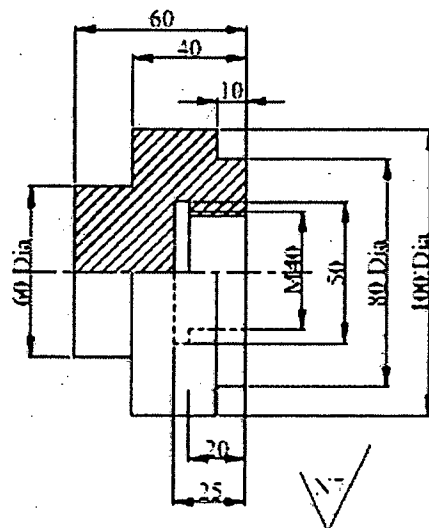
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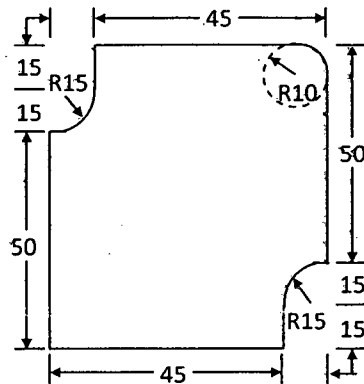
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[OR]

- 14b Prepare NC program in APT for machining the contour shown in Figure below with two passes one with rough-cut and other with finish cut.



(16)

- 15a What do you understand by the terms product structure, configuration management, process management and digital mockup in the context of product data modeling? (16)

[OR]

- 15b (i) Write short notes on inventory management vis-à-vis just in time manufacture. (8)
- (ii) Define repetitive manufacturing. Show how KANBAN is used to control work flow in repetitive manufacturing environments. (8)