

Code No: C0401

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
M.TECH I - SEMESTER EXAMINATIONS, APRIL/MAY - 2012
ADVANCED CAD
(CAD/CAM)

Time: 3hours**Max. Marks: 60**

Answer any five questions
All questions carry equal marks

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- 1.a) With a neat diagram explain the working principle of ink jet printer.
- b) A parametric cubic curve passes through the points (0, 0), (2, 4), (4, 3), (5, -2) which are parameterized at $u = 0, \frac{1}{4}, \frac{3}{4}$ and 1 respectively. Determine the geometric coefficient matrix and slope of the curve when $u = 0.5$.
- 2.a) Explain the parametric representation of Surface of revolution.
- b) Reflect the polygon whose vertices are A(-1,0), B(0,-2), C(1,0) and D(0,2) about the lines
 - i) Horizontal line $y = 2$, and
 - ii) Vertical line $x = 3$.
- 3.a) Given the four corners $P_0(1,1)$, $P_1(3,1)$, $P_2(3,3)$ and $P_3(4,2)$. Find the equation of the bi-cubic surface.
- b) Discuss the important properties of Bezier surface.
- 4.a) What is B-representation in solid modeling? Explain the importance in the construction of the B- representation with examples.
- b) Mention the different types of data formats in CAD/CAM and discuss briefly about any one of them.
- 5.a) Derive the finite element equation of a two-node bar element using potential energy method.
- b) Discuss about Mechanical Tolerances in CAD/CAM.
- 6.a) List various types of input devices and explain about any two of them with neat diagrams.
- b) Compare Segmentation and Trimming.
- 7.a) What is Finite Element Modeling? Discuss its application in Mechanical Engineering Design.
- b) Compare analytical and synthetic curves.
8. Write short notes on the following:
 - a) COONS patch
 - b) Constructive Solid Geometry
 - c) Collaborative Design.

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