**Code No: C0401** **R09**

**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, ¼, ¾ 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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