FACULTY OF ENGINEERING
B.E. 3/4 (Mech./Prod./AE) II Semester (Main) Examination, May/June 2012
CAD/CAM

Time: 3 Hours]   [Max. Marks: 75

Note : Answer **all** questions from Part **A**, Answer **any five** questions from Part **B**.

PART – A   25 Marks

1. Differentiate between engineering design, computer aided design and engineering analysis.

2. What are properties of splines ?

3. Explain the concept of NURBS.

4. Differentiate between analytic and synthetic surfaces.

5. What is FEA ? Where and why FEA is used ?

6. Differentiate between shearing and reflection transformation.

7. What is CAD database ? Define the database structure.

8. Sketch NC lathe and NC-Mill coordinate systems.

9. What do you mean by tool length and cutter radius compensation ?

10. Differentiate between FANUC and SINUMERIC controller.

PART – B   50 Marks

11. a) Describe PDES format. Explain where it is used.   5

    b) Write a APT statements for point to point, straight cut and contouring motions with examples.   5

12. Sketch a B-spline of 3rd degree 2nd order curve with 4 polygon vertices $P_0(1, 1)$, $P_1(3, 3)$, $P_2(5, 4)$ and $P_3(6, 5)$ and explain the continuity and properties of the resulted curve.   10

13. How do you compose surfaces with analytic and synthetic curves ? Explain.   10

14. a) Explain the solid modeling of C-rep. and B-rep techniques. **5**

    b) Write the transformations of (i) scaling (ii) rotation about arbitrary point (iii) translation and shearing in y-direction. **5**

15. a) What is adaptive control ? Explain ACO and ACC type of adaptive control system. **5**

    b) Sketch robot anatomy. Suggest suitable drives used for each configuration. **5**

16. a) Describe part family and coding system. Explain how opitz system works. **5**

    b) Explain variant and generative process plan. **5**

17. Write the following : **10**

    a) Rapid tooling and rapid prototyping

    b) FMS and CIMS

    c) Mechanical tolerencing.