Code No: 07A7EC29 **R07** **Set No. 2**

IV B.Tech I Semester Examinations,November 2010
CAD CAM
Common to Aeronautical Engineering, Metallurgy And Material Technology
Time: 3 hours **Max Marks: 80**

Answer any FIVE Questions
All Questions carry equal marks

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1. Explain in detail the Extended bottleneck model used in FMS. [16]
2. What are the advantages of CAPP over Manual process planning? Explain in detail. [16]
3. (a) Explain the principle of operation of NC feed-back devices.
   (b) Discuss the principle of Encoders. What is their use in NC? [8+8]
4. Discuss the JIT production system with respect to the following:
   (a) Product mix
   (b) Production equipment and
   (c) Vendor selection. [5+5+6]
5. The two ends of a straight line have coordinates A (0.5, 1.5) and B (1, 2.5). The line should be rotated through 40^0 in the counter clockwise direction about the origin in XY plane and then translated 4 units in +X direction. Write the necessary transformation matrix and determine the new coordinates of the two end points. [16]
6. (a) What is a $2^1/_2$ D model? Sketch some examples.
   (b) Discuss wire frame versus solid modeling schemes. [8+8]
7. The figure 7 shows four points.

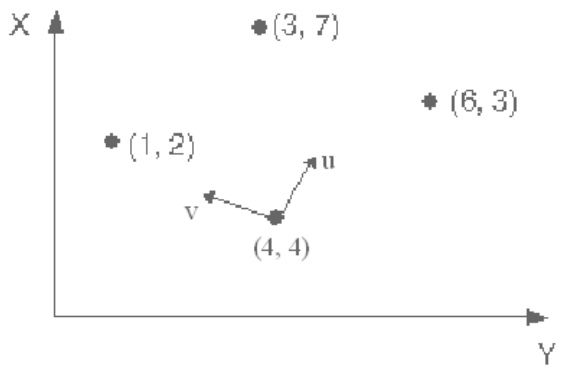

Figure 7

   (a) Find the equation of the Bezier surface defined by the four data points. Use the u and v directions shown. Find the surface tangent and normal vectors. Are they constant? What is your conclusion?

(b) Using the same data points, find the equation of the ruled surface. Is it identical to Bezier surface. [16]

8. Explain the following facilities in Autodesk inventor with an example Shell, rib, loft, swap, coil, thread, Face draft, split, work plane and work axis. [16]

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Code No: 07A7EC29 **R07** **Set No. 4**

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Time: 3 hours **Max Marks: 80**

Answer any FIVE Questions
All Questions carry equal marks

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1. What are the differences between the Bottleneck model and Extended bottleneck model of FMS? Explain. [16]
2. Explain the concept of antialiasing of lines. Give examples of their implementations in graphic terminals. [16]
3. (a) What are the differences between fixed sequential format and work address format?
   (b) What is a canned cycle? Give any four examples. [8+8]
4. How does CIM differ from FMS? Explain. [16]
5. (a) Develop the form code of the Optiz system for the part shown in figure 5b below. All dimensions are in mm.
   (b) Describe the CODE system used in GT. [8+8]

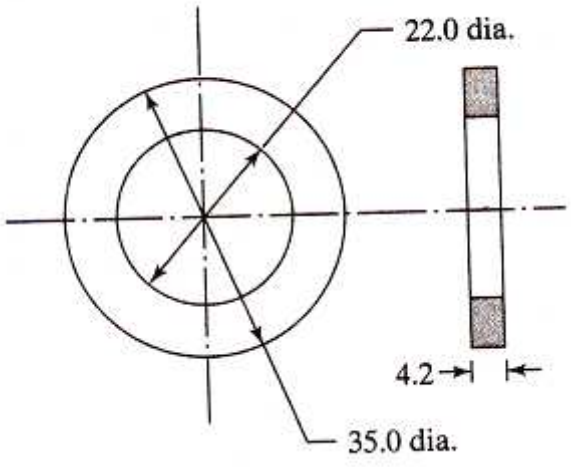

Figure 5b

6. (a) Specify a digitizer for the CAD application and justify your choice
   (b) What are the various constructional methods employed in the making of a digitizer? [16]
7. Find the equation of an open quadratic B-spline curve defined by five control points. [16]

8. Explain the following facilities in Autodesk inventor with an example
Line / spline, Circle / ellipse, arc, rectangle, fillet / chamfer, point, hole center, polygon, mirror. [16]

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Code No: 07A7EC29 **R07** **Set No. 1**

IV B.Tech I Semester Examinations,November 2010
CAD CAM
Common to Aeronautical Engineering, Metallurgy And Material Technology
Time: 3 hours **Max Marks: 80**

Answer any FIVE Questions
All Questions carry equal marks

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1. How do you implement FMS in manufacturing industry? Discuss the procedure in detail. [16]

2. What do we expect a geometric modeling system to accomplish, in the broad sense, in the total manufacturing sense? [16]

3. (a) List the benefits of CAD/CAM systems.
   (b) Explain how productivity increases by using CAD/CAM systems. [8+8]

4. Find all the layer-related commands on your system, specifically how to select/deselect layers, assign entities to layers, assign layers to entities, assign colors to layers, modify layer colors and modify layers of existing entities. [16]

5. A square with an edge length of 15 units is located in the origin with one of the edge at an angle of 30^0 with the +X axis. Calculate the new position of the square if it is rotated about Z axis by an angle 30^0 in the clockwise direction. [16]

6. A turning operation is to be performed on an NC lathe. Cutting speed = 2.5 m/sec, feed = 0.2 mm/rev, and depth = 4.0 mm. Work piece diameter = 100 mm and its length = 400 mm. Determine
   (a) the rotational speed of the work bar.
   (b) the feed rate,
   (c) the metal removal rate and
   (d) the time to travel from one end of the part to the other. [16]

7. Four machines used to produce a family of parts are to be arranged into a GT cell. The From-To data for the parts processed by the machines are shown in the Table below.
   (a) Determine the most logical sequence of machines for this data using Hollier Method.
   (b) Construct the flow diagram for the data, showing where and how many parts enter and exit the system
   (c) Compute the percentage of in-sequence moves and the percentage of backtracking moves in the solution.
   (d) Develop a feasible layout plan for the cell. [16]

From	To			
	1	2	3	4
1	0	10	0	40
2	0	0	0	0
3	50	0	0	20
4	0	50	0	0

8. What is MAP? Explain its importance in CIM? What does it contain? [16]

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Code No: 07A7EC29 **R07** **Set No. 3**

IV B.Tech I Semester Examinations,November 2010
CAD CAM
Common to Aeronautical Engineering, Metallurgy And Material Technology
Time: 3 hours **Max Marks: 80**

Answer any FIVE Questions
All Questions carry equal marks

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1. Explain the Retrieval CAPP with an example. What are its relative advantages when compared to the Generative CAPP? [16]
2. Explain the details of polygon clipping. Give its advantages compared to the line clipping. [16]
3. When do you say that a manufacturing system is Flexible? What are the tests to be fulfilled by such system? [16]
4. (a) Why does circle trimming follow the counterclockwise rule?
   (b) Give some examples where the layering concept is useful. [8+8]
5. Find the normal vector to a cubic spline curve at any of its points. [16]
6. (a) In what way is the structure of NC machine tools different from conventional machine tools? Why?
   (b) List the types of drives used for stepless control of NC machine tool spindles. [8+8]
7. If the frame buffer is limited to 256 k bytes of RAM, what is the reasonable resolution given the aspect ratio of 1? The display is having an 8 bit colour planes and the screen size is having an aspect ratio of 4: 3. [16]
8. Discuss the various network topologies used in CIM. Explain their relative advantages and disadvantages. [16]

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