Code No: **R41032** **R10** **Set No. 1**

IV B.Tech I Semester Regular/Supplementary Examinations, Nov/Dec - 2015

CAD/CAM

(Common to Mechanical Engineering and Automobile Engineering)

Time: 3 hours **Max. Marks: 75**

Answer any FIVE Questions
All Questions carry equal marks
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1 a) What are the various display devises that are used for displaying graphic information? Discuss the merits and demerits of each one. [8]

b) Discuss the influence exerted by the computers on the manufacturing. [7]

2 a) The unit square with vertices A (1, 1), B (2, 1), C (2, 2), and D (1, 2) is transformed in the following sequence.
i) Scaled about the origin by factors of 4 and 2 in the x- and y- directions.
ii) Rotated about point B through 90^0.
What are the coordinates of the vertices of transformed geometry? [10]

b) Differentiate between Raster-scan technique and Random-scan technique. [5]

3 a) What is geometric modelling? Compare the various modelling techniques. [6]

b) Develop a general form of Bezier curve for the control points given by (0, 2), (2, 3), (3, 2) and (3, 0). [9]

4 a) What is Layering? Give some examples where the layering concept is useful. [7]

b) Give some examples where the Offsetting and Grid concepts are used with a CAD drafting system. [8]

5 a) Write a part programme for the component shown in figure 1. All the dimensions are in mm only.

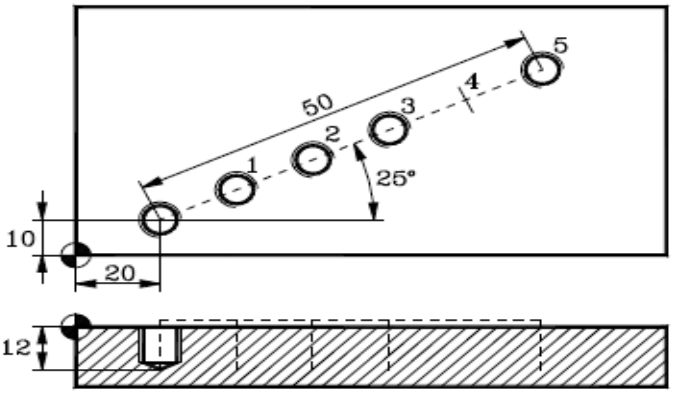


Figure 1 [10]

b) Differentiate between NC and CNC machines. [5]

Code No: **R41032** **R10** **Set No. 1**

6 a) What is Group Technology? Discuss the benefits of using Group Technology [7]

b) Describe in detail about the methods used in Computer-Aided Process Planning. [8]

7 a) Discuss the various methods available for the integration of Computer Aided Quality Control with CAD/CAM system. [8]

b) Enumerate Benefits of Computer Aided Inspection. [7]

8 a) What are the objectives and potential benefits of Computer Integrated Manufacturing Systems? [7]

b) Give the inventory control flow for the Computer Integrated Manufacturing System. [8]

Code No: **R41032** **R10** **Set No. 2**

IV B.Tech I Semester Regular/Supplementary Examinations, Nov/Dec - 2015

CAD/CAM

(Common to Mechanical Engineering and Automobile Engineering)

Time: 3 hours **Max. Marks: 75**

Answer any FIVE Questions

All Questions carry equal marks

*****

1 a) What are the types of plotters? Explain their working. [8]

b) Explain how productivity increases by using CAD/CAM systems. [7]

2 a) Derive the combined transformation matrix to rotate the given 3-D object about an axis passing through the points (x_a, y_a, z_a) and (x_b, y_b, z_b). [9]

b) Describe the various database structures used for geometric modelling. [6]

3 a) How are solid modellers categorized? Explain the generic architecture of any solid modeller. [6]

b) A line segment in the XY plane is defined by end points (0, 6) and (8, 0). Sweep the line 20 units along Z-axis. [9]

4 a) Explain linear and angular dimensioning used in a standard cad system with a neat sketch. [8]

b) What is the best kind of modelling system? Explain with suitable sketches. [7]

5 a) Write a part programme for the component shown in figure 1. All the dimensions are in mm only. [9]

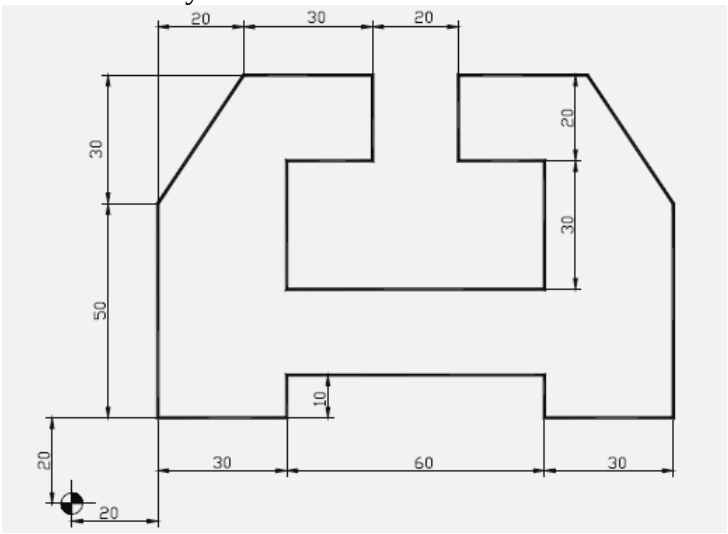


Figure 1

b) Write a short note on the Miscellaneous functions in part programming. [6]

Code No: **R41032** **R10** **Set No. 2**

6 a) Briefly present the types of classification and coding systems used in Group Technology. [8]

b) Define the Production Flow Analysis. Present the various steps involved in the Production Flow Analysis. [7]

7 a) Explain the various activities related to computer aided quality control with a block diagram. [7]

b) Discuss the various steps involved in inspection procedure. [8]

8 a) Why the control of the CIM system is necessary? [8]

b) How does an increase in quantity in the Master Production Schedule gross requirements affect the Manufacturing Resource Planning output? [7]

Code No: **R41032** **R10** **Set No. 3**

IV B.Tech I Semester Regular/Supplementary Examinations, Nov/Dec - 2015

CAD/CAM

(Common to Mechanical Engineering and Automobile Engineering)

Time: 3 hours **Max. Marks: 75**

Answer any FIVE Questions

All Questions carry equal marks

*****

1 a) Describe the types of storage devices used in computers. [8]

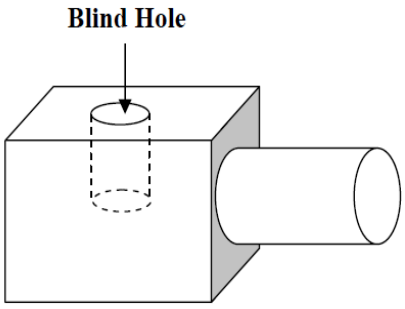
b) Discuss the benefits of CAD/CAM systems in industrial manufacturing. [7]

2 a) Present a brief account of various hidden surface algorithms. [6]

b) Develop a combined transformation matrix to reflect the given object about a line passing through the point (a, b) and having a slope m. [9]

3 a) Construct the CSG tree and CSG expressions for a solid model as shown in Figure 1.

Figure 1



[8]

b) What is B-representation in solid modelling? Explain the importance in the construction of the B- representation with examples. [7]

4 a) Explain various display commands used in CAD modelling system. [7]

b) Define a sketch plane. What are the advantages and disadvantages of using sketch plane approach? [8]

Code No: **R41032** **R10** **Set No. 3**

5 a) Write a short note on the preparatory functions used in a NC Part Programming. [6]

b) A Ø50 mm end mill is to be used to mill the XY surface by 6 mm. The billet size is 200 mm X 100 mm X 20 mm. Write the part programme. [9]

6 a) What is Computer-Aided Process Planning? What are the benefits of using CAPP? [6]

b) Apply rank-order clustering method to obtain the logical machine groups and the corresponding part families for the following part-machine incidence matrix

	Parts								
Machines	A	B	C	D	E	F	G	H	I
1	1			1				1	
2					1				1
3			1		1				1
4		1				1			
5	1							1	
6			1						1
7		1				1	1		

[9]

7 a) Explain the different types of coordinate measuring machines that are used in the industry. [8]

b) Differentiate between on-line/in-process and on-line/post-process inspection methods [7]

8 a) What are the different basis of classifying production system according to the quality and variety of product? [7]

b) What is the basic principal of production control for CIM systems? [8]

Code No: **R41032** **R10** **Set No. 4**

IV B.Tech I Semester Regular/Supplementary Examinations, Nov/Dec - 2015

CAD/CAM

(Common to Mechanical Engineering and Automobile Engineering)

Time: 3 hours **Max. Marks: 75**

Answer any FIVE Questions

All Questions carry equal marks

****

1 a) List the components of a fundamental CAD Systems. Present the significance of each component system. [8]

b) What is product life cycle? How the CAD product life cycle is different from the conventional product life cycle? [7]

2 a) Classify the planar geometric projections. Differentiate between the parallel and perspective projections with a suitable example. [7]

b) Describe the out-code structure of Cohen-Sutherland algorithm. List the merits and demerits of this algorithm. [8]

3 a) What are the three modelling modes used in the geometric modelling? Explain their relative merits and demerits. [6]

b) Find the equation of Hermite Cubic spline which is defined by end points (0, 0) and (3, 0) along with tangent vectors (1, 1) and (1, 1). Also calculate intermediate points at parametric value of 0.5 and 0.6. [9]

4 a) What are the basic geometric entities available for creating solid models in drafting system? [6]

b) Specify the layer-related commands on a CAD system in the following cases.

i) To select/deselect layers,
ii) Assign entities to layers,
iii) Assign layers to entities,
iv) Assign colours to layers,
v) Modify layer colours
vi) Modify layers of existing entities. [9]

Code No: **R41032** **R10** **Set No. 4**

5 a) Compare the Open-Loop NC control system with closed-Loop NC control system [7]

b) Explain the usage of IJK part programming method for arc generation. [8]

6 a) Write a short note on Opitz Classification and Coding System. [8]

b) Give a brief description of production flow analysis [7]

7 a) What are the objectives of computer aided quality control? [7]

b) Discuss major non-contact inspection methods in computer quality control. [8]

8 a) How does the computer integration manufacturing technique reduce the lead time and enhance the quality of manufacturing of a product? [8]

b) What do you mean by CAM, CAD/CAM and CIM? Differentiate them [7]