Code No: **R1641032** **R16** **Set No. 1**

IV B.Tech I Semester Regular/Supplementary Examinations, March - 2021

CAD/CAM

(Common to Mechanical Engineering and Automobile Engineering)

Time: 3 hours **Max. Marks: 70**

Question paper consists of Part-A and Part-B
Answer ALL sub questions from Part-A
Answer any FOUR questions from Part-B

*****

PART–A *(14 Marks)*

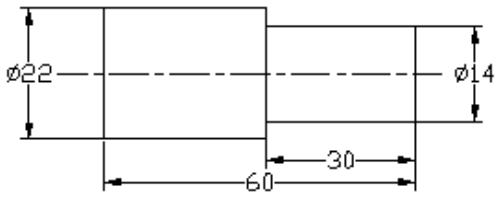
1. a) Explain the storage systems used in a computer. [3]
   b) Explain surface modeling. [2]
   c) What is adaptive control? [2]
   d) Explain MI CLASS system. [2]
   e) Name different types of CMM. [2]
   f) Explain MRP and what are the various inputs of MRP. [3]

PART–B *(4x14 = 56 Marks)*

2. a) Discuss about the input devices of CAD system. [7]
   b) Why CAD replaced conventional design? In what way the CAD helps is productive manufacturing? [7]

3. a) Explain in detail about Bezier surfaces and the Coons surfaces. [7]
   b) What are the major surface entities provided by CAD/CAM system? [7]

4. a) What do you understand by DNC system? Explain in detail about DNC system. [7]
   b) Write the part program for the following profile



[7]

5. a) Explain various components of a FMS in detail. [7]
   b) Explain the importance of CAPP in manufacturing industries. [7]

6. a) Explain the advantages and limitations of Non-Contact inspection over optical and contacts type. [7]
   b) Explain any two contact type inspection methods with neat sketch. [7]

7. a) Explain the following FMS layout configurations with a neat sketch.
      (i) In-line
      (ii) Open-field
      (iii) Ladder
      (iv) Loop [7]
   b) Differentiate Lean manufacturing and Mass production. [7]

Code No: **R1641032** **R16** **Set No. 2**

IV B.Tech I Semester Regular/Supplementary Examinations, March - 2021

CAD/CAM

(Common to Mechanical Engineering and Automobile Engineering)

Time: 3 hours **Max. Marks: 70**

Question paper consists of Part-A and Part-B
Answer ALL sub questions from Part-A
Answer any FOUR questions from Part-B
*****

PART–A *(14 Marks)*

1. a) What are typical hardware components of a stand-alone CAD system? [2]
   b) What is wire frame modeling? [2]
   c) What is right hand rule? [2]
   d) Discuss benefits of GT in various Manufacturing industries. [3]
   e) What is the need of quality control in a manufacturing industry? How CAQC is useful in quality control. [3]
   f) What is MRP? What are its features? [2]

PART–B *(4x14 = 56 Marks)*

2. a) What do you understand by Hidden surface removal in detail with its advantages and limitation. [7]
   b) Define Clipping. Enumerate simple clipping algorithm. [7]

3. a) Explain in detail about Constructive Solid modeling. [7]
   b) What are the various editing commands used in drafting system. [7]

4. a) Explain the following
      (i) point-to-point cut mode
      (ii) straight cut mode
      (iii) contouring cut mode [7]
   b) Describe various G and M code in CNC machines [7]

5. a) How the human resources are utilized in FMS [7]
   b) Differentiate retrieval type and generative type CAPP systems. Explain their advantages and disadvantages. [7]

6. a) What are the various CMM machines used in industries? Explain any two in brief. [7]
   b) Explain the importance of the integration of CAD/CAM with inspection system. [7]

7. a) What do you mean by Computer integrated manufacturing? Explain in brief [7]
   b) What are the principles of Lean manufacturing. [7]

Code No: **R1641032** **R16** **Set No. 3**

IV B.Tech I Semester Regular/Supplementary Examinations, March - 2021

CAD/CAM

(Common to Mechanical Engineering and Automobile Engineering)

Time: 3 hours **Max. Marks: 70**

Question paper consists of Part-A and Part-B
Answer ALL sub questions from Part-A
Answer any FOUR questions from Part-B
*****

PART–A *(14 Marks)*

1. a) Write any three differences between Raster-scan technique and Random scan technique. [3]
   b) Write the important features of layers. [2]
   c) Explain about servomotors used in spindle and feed control used in CNC machine tools . [3]
   d) Explain any two functions of FMS computer control system. [2]
   e) How accuracy differs from precision? [2]
   f) What are various material handling systems? [2]

PART–B *(4x14 = 56 Marks)*

2. a) Enumerate about following input devices of CAD system
      (i) Light pen
      (ii) Digitizers
      (iii) Joy stick
      (iv) Mouse
      (v) keyboard [7]
   b) What are components of a CRT? Explain with neat sketch. [7]

3. a) Define solid modeling and explain the solid modeling in brief with its advantages and limitations. [7]
   b) What are the primitives used in solid modeling? [7]

4. a) Differentiate NC and CNC. [7]
   b) Why CAD is preferred over NC machines? [7]

5. a) How part classification is made in Group technology? [9]
   b) What are the advantages and limitations of group technology? [5]

6. a) What are the major functions of CAQC in manufacturing industry? [7]
   b) Draw and explain various CMMS used in manufacturing industry. [7]

7. a) Write any three major functions of AS/RS and write their advantages and disadvantages? [7]
   b) What re the various computer control systems used in CIM? [7]

Code No: **R1641032** **R16** **Set No. 4**

IV B.Tech I Semester Regular/Supplementary Examinations, March - 2021

CAD/CAM

(Common to Mechanical Engineering and Automobile Engineering)

Time: 3 hours **Max. Marks: 70**

Question paper consists of Part-A and Part-B
Answer ALL sub questions from Part-A
Answer any FOUR questions from Part-B

*****

PART–A *(14 Marks)*

1.	a)	What is polygon clipping?	[2]
	b)	Name any six manipulation techniques in CAD.	[2]
	c)	What is machining centre and explain its characteristics?	[3]
	d)	Explain part design attributes.	[2]
	e)	What are the various non-contact inspection methods?	[3]
	f)	What do you understand by lean manufacturing?	[2]

PART–B *(4x14 = 56 Marks)*

2.	a)	Explain different types of plotters.	[7]
	b)	What is ICG? Explain various elements of ICG.	[7]
3.	a)	What are the trending CAD/CAM softwares? Explain their applications in various industries.	[7]
	b)	What are the different display commands used in CAD modeling system?	[7]
4.	a)	Explain about computer aided part programming and what are its advantages and limitations?	[7]
	b)	Explain about open loop and closed loop systems.	[7]
5.	a)	Discuss OPTIZ coding system.	[7]
	b)	Enumerate steps involved in production flow analysis.	[7]
6.	a)	Explain following optical non-optical methods in detail (i) scanning laser beam device (ii) photogrammetry	[7]
	b)	Enumerate the role of computers in quality control.	[7]
7.	a)	Discuss various principles of material handling system.	[7]
	b)	Define AGV and explain different functions of AGV.	[7]

Code No: **R1641032** **R16** **Set No. 1**

IV B.Tech I Semester Regular Examinations, October/November - 2019

CAD/CAM

(Common to Mechanical Engineering and Automobile Engineering)

Time: 3 hours **Max. Marks: 70**

Question paper consists of Part-A and Part-B
Answer ALL sub questions from Part-A
Answer any FOUR questions from Part-B
*****

PART–A *(14 Marks)*

1 a) List out output devices of CAD. [2]
b) What are basic geometric commands in drafting system? [2]
c) What do you understand the M and G functions? [3]
d) Define the FMS. [2]
e) Give a brief note on computer aided quality control. [2]
f) What is AGV? [3]

PART–B *(4x14 = 56 Marks)*

2 a) Briefly discuss the need of computers in industrial manufacturing, mentioning their applications. [7]
b) As shown Figure 2(b) shows a square with an edge length of 10 units is located on the orgin with one of the edge at an of 30^0 with the +axis. Calculate the new position of the square if it is rotated about Z axis by an angle 30^0 in the clockwise direction.

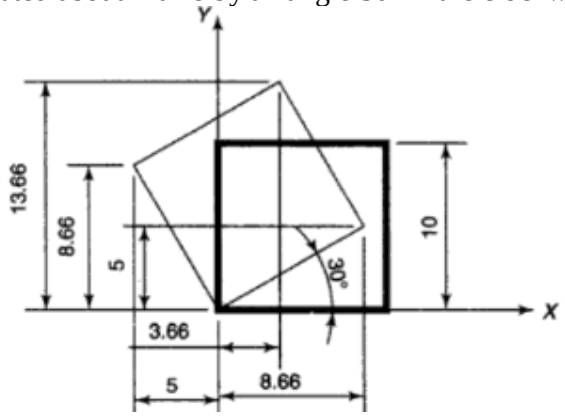


Figure 2(b) [7]

3 a) Define Bezier surface? Explain various characteristics of this surface. [7]
b) In detail explain the salient features of solid modeling. [7]

4 a) Differentiate Manual part programming and Computer assisted part programming. [7]
b) Explain the concept of adaptive control of NC machines. [7]

5 a) What is group technology? When is it suitable in manufacturing? What are its benefits? [7]
b) What is CAPP? Explain the any one type of Capp with neat sketches. [7]

6 a) Briefly explain some of the methods used in computer aided quality control. [7]
b) Explain the integration of CAQC with CAD/CAM [7]

7 a) Discuss the principle of material handling. Name and describe the five types of material handling devices? [7]
b) Explain the different types of manufacturing systems. [7]

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Code No: **R1641032** **R16** **Set No. 2**

IV B.Tech I Semester Regular Examinations, October/November - 2019

CAD/CAM

(Common to Mechanical Engineering and Automobile Engineering)

Time: 3 hours **Max. Marks: 70**

Question paper consists of Part-A and Part-B
Answer ALL sub questions from Part-A
Answer any FOUR questions from Part-B
*****

PART–A *(14 Marks)*

1.	a)	List out hard copy devices in CAD system	[2]
	b)	What are the functions of Geometric Modelling in design?	[3]
	c)	Define APT.	[2]
	d)	What are the inputs and outputs of FMS?	[2]
	e)	Define computer aided testing.	[2]
	f)	State any two benefits of CIM system.	[3]

PART–B *(4x14 = 56 Marks)*

2.	a)	Draw and explain the CAD/CAM product cycle.	[7]
	b)	Explain cohen-sutherland clipping algorithm.	[7]
3.	a)	Find the equation of a line is that tangent to a circle whose equation is $X^2+Y^2=49$ and passing through the point (15, 6).	[7]
	b)	Enlist and explain with different Boolean operations in solid modeling.	[7]
4.	a)	Explain various steps involved in CNC part programming.	[7]
	b)	Explain the concept of adaptive control of NC machines.	[7]
5.	a)	What is group technology? When is it appropriate to go for group technology? What are its advantages?	[7]
	b)	Draw the FMS layout and explain the function of each component of FMS.	[7]
6.	a)	How is traditional quality control different from computer aided quality control? Discuss.	[7]
	b)	Explain the any one type of Non-contact inspection technique used in computer-aided quality control system.	[7]
7.	a)	Discuss the role of human labor in manufacturing systems.	[7]
	b)	Write the advantage of material handling system.	[7]

Code No: **R1641032** **R16** **Set No. 3**

IV B.Tech I Semester Regular Examinations, October/November - 2019

CAD/CAM

(Common to Mechanical Engineering and Automobile Engineering)

Time: 3 hours **Max. Marks: 70**

Question paper consists of Part-A and Part-B
Answer ALL sub questions from Part-A
Answer any FOUR questions from Part-B

*****

PART–A *(14 Marks)*

1. a) What is the structure of a computing system? [2]
   b) What are the Boolean operations used in solid modelling? [2]
   c) What are the elements of NC system? [2]
   d) What is the need of Group Technology? [3]
   e) Define Quality control. [2]
   f) Write about types of manufacturing systems? [3]

PART–B *(4x14 = 56 Marks)*

2. a) Briefly explain the term scaling, translation and rotation used in Graphics. [7]
   b) What are the input devices more commonly employed for general graphics applications? Present their merits and demerits. [7]

3. a) What are the requirements of geometric modeling? [7]
   b) What is meant by sweep? Discuss in detail the various types of sweep techniques available for 3D geometric construction. [7]

4. a) Explain the difference between CNC and DNC along with neat sketches. [7]
   b) Write NC part program for the part shown in the below shown in figure 4(b). All the dimensions are in mm only.

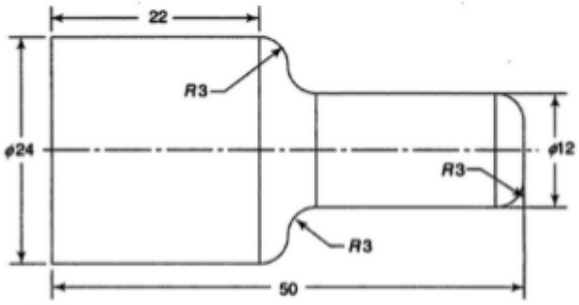

Figure 4(b) [7]

5. a) What is a production Flow Analysis? Discuss various steps involved in PFA. [7]
   b) How do you overcome the difficulties in traditional process planning by adopting CAPP method? [7]

6. a) Define computer aided quality control. Explain how it is implemented. [7]
   b) Explain any one contact inspection technique with neat sketch. [7]

7. a) Explain the features of MRP-I with a neat block diagram. State its applications. [7]
   b) Discuss the role of human labor in manufacturing systems. [7]

Code No: **R1641032** **R16** **Set No. 4**

IV B.Tech I Semester Regular Examinations, October/November - 2019

CAD/CAM

(Common to Mechanical Engineering and Automobile Engineering)

Time: 3 hours **Max. Marks: 70**

Question paper consists of Part-A and Part-B
Answer ALL sub questions from Part-A
Answer any FOUR questions from Part-B
*****

PART–A *(14 Marks)*

1. a) Name some coordinate systems in computer graphics. [2]
   b) Differentiate the terms wire frame, surface and solid models. [3]
   c) What are M03, M30 codes stands for in NC Programming? [2]
   d) What are the various approaches available for CAPP? [2]
   e) State the objectives of quality control. [3]
   f) What is meant by CIM? [2]

PART–B *(4x14 = 56 Marks)*

2. a) Explain the various types of display devices. [7]
   b) Briefly explain the hidden line removal algorithm. [7]

3. a) Explain the Constructive Solid Geometry (CSG) method to create models [7]
   b) Write the properties of Bezier and B-Spline curves. [7]

4. a) What are the types of statements used in APT programming? Explain in detail. [8]
   b) Write a part program for the profile given by using G-codes and M-codes assuming suitable data (all dimensions are in mm) as shown in figure 4(b)

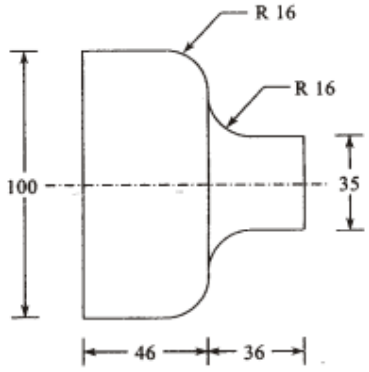

Figure 4(b) [6]

5. a) Briefly discuss about tool management system [6]
   b) Discuss the following types of layouts in the design of FMS:
   (i) Circular layer (ii) Linear layers (iii) Loop layers [8]

6. a) List out different types of CMM? State its applications. [8]
   b) Discuss the terminology used in quality control. [6]

7. a) Describe different types of material handling systems used in CIM briefly. [7]
   b) State the advantages of CIM in manufacturing industry in detail. [7]

Code No:**R1641032** **R16** **Set No. 1**

IV B.Tech I Semester Supplementary Examinations, February- 2020

CAD/CAM

(Common to Mechanical Engineering and Automobile Engineering)

Time: 3 hours **Max. Marks: 70**

Question paper consists of Part-A and Part-B
Answer ALL sub questions from Part-A
Answer any FOUR questions from Part-B
*****

PART–A*(14 Marks)*

1. a) What is the role of computers in manufacturing? [2]
   b) Write a short note on solid modeling. [3]
   c) What are the basic components of an NC system? [2]
   d) What is the need of Group Technology? [2]
   e) What is the role of computers in quality control? [3]
   f) What is the significance of quality control in CIM? [2]

PART–B*(4x14 = 56 Marks)*

2. a) Describe transformations of the graphics? Explain three dimensional transformations? [7]
   b) Discuss in detail about input and output devices. [7]

3. a) Derive the parametric equation for Hermite cubic curve? Discuss its importance. [7]
   b) What are the manipulation curve fitting techniques used in wire frame modelling? [7]

4. a) Explain the basic structure of DNC and CNC systems. [7]
   b) What are the main features of CNC Machine Tool? Write any 10 G-codes and 10 M-codes with a short description. [7]

5. a) Explain about the OPITZ coding system generally used in Group Technology. [7]
   b) Discuss the circular, linear, loop layers' types of layouts in the design of FMS. [7]

6. a) Explain the application guidelines for the three types of computer integrated manufacturing systems? [7]
   b) Describe the Scheduling and Dispatching issues related to Flexible Manufacturing system? [7]

7. a) Explain the material handling systems used in CIM. [7]
   b) How will you use internet as an advantage to implement CIM? [7]