Code No: **RT41032** **R13** **Set No. 1**

IV B.Tech I Semester Regular/Supplementary Examinations, Oct/Nov - 2018

CAD/CAM

(Common to Automobile Engineering and Mechanical 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 THREE questions from Part-B
*****

PART–A *(22 Marks)*

1. a) Enlist the applications of computer graphics. [4]
   b) What are the common modeling methods available for surface design in a surface modeling software? [4]
   c) What is the difference between Numerical Control and Adaptive Control? [4]
   d) Enlist the coding systems used in Group Technology. [4]
   e) Define quality control. [3]
   f) On what basis to select a machine tool related to CIM system [3]

PART–B *(3x16 = 48 Marks)*

2. a) Discuss various CAD input devices with suitable diagrams. [8]
   b) Give the details of Z-buffer method for hidden surface removal. [8]

3. a) Define the cubic spline and Bezier curves. Which of them is more popular in CAD and why? [8]
   b) Give details of a few editing commands used in a drafting system. [8]

4. a) Write the manual part programme for the part shown in figure 4 (a). Assume suitable raw material size.

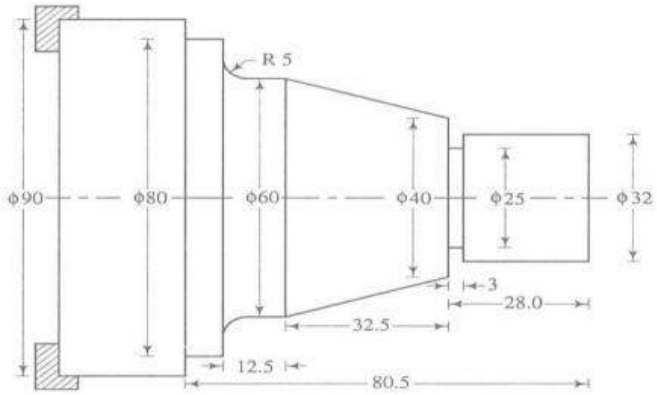

Figure 4 (a) [10]

   b) What are the features of CNC machining center. [6]

5. a) Briefly explain the need of CAPP (Computer Aided Process Planning). [8]
   b) Discuss how a company can benefit from a suitable classification and coding systems? [8]

6. a) With neat sketch explain the working principle of Coordinate Measuring Machine (CMM) used for contact inspection of machine parts. [10]
   b) What are the objectives of computer aided quality control? [6]

7. a) With neat sketch explain the main elements of CIM systems. [8]
   b) List out what are the various material handling systems? Briefly explain any two systems. [8]

Code No: **RT41032** **R13** **Set No. 2**

IV B.Tech I Semester Regular/Supplementary Examinations, Oct/Nov - 2018

CAD/CAM

(Common to Automobile Engineering and Mechanical 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 THREE questions from Part-B
*****

PART–A *(22 Marks)*

1. a) Define the terms CAD and CAM. [4]
   b) What do you understand the 'Snap' feature in CAD? [3]
   c) Write the syntax for geometry statement & motion statement in APT language. [4]
   d) Enumerate the advantages of group technology. [4]
   e) What is meant by computer aided quality control? [3]
   f) Name some material handling equipment. [4]

PART–B *(3x16 = 48 Marks)*

2. a) What are the various display devices that are used for displaying graphic information? Present their merits and demerits. [8]
   b) Define clipping. Also explain the working of a simple line clipping algorithm. [8]

3. a) What is meant by sweep? Discuss in detail the various types of sweep techniques available for 3D geometric construction. [8]
   b) Write short note on following:
   (i) Concept of layers
   (ii) Solid modeling [8]

4. a) Discuss the concept of adaptive control and also explain its types. [10]
   b) Write a part program for the component shown in figure 4 (b) below :

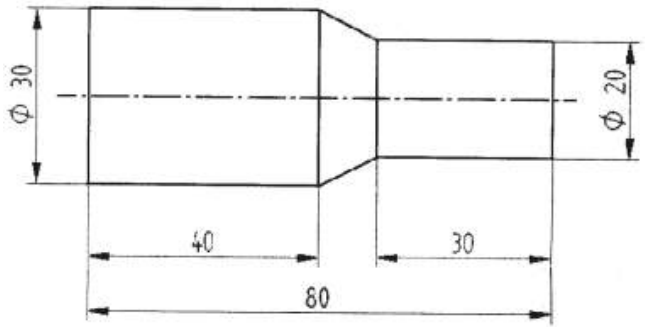

Figure 4(b)

Work material : mild steel
Work size : 32 mm dia
Length : 90 mm
Speed : 800 r.p.m.
Feed : 200 mm/min
Depth of cut : 2 mm
Assume other data. [6]

Code No: **RT41032** **R13** **Set No. 2**

5. a) Discuss how part classification is done in the context of GT. [8]
   b) Explain Retrieval type CAPP system with the help of a block diagram. [8]

6. a) Define the term quality? Write the terminology used in computer aided quality control. [8]
   b) Explain the different types of contact inspection techniques used in CAQC systems. [8]

7. Write short notes on any **THREE** of the following:
   (a) Types of Manufacturing systems
   (b) Computer control system
   (c) Automated Guided Vehicles
   (d) Automated storage and Retrieval System(AS/RS) [16]

Code No: **RT41032** **R13** **Set No. 3**

IV B.Tech I Semester Regular/Supplementary Examinations, Oct/Nov - 2018

CAD/CAM

(Common to Automobile Engineering and Mechanical 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 THREE questions from Part-B
*****

PART–A *(22 Marks)*

1. a) What are the benefits of computer aided design over conventional design process. [4]
   b) Write any 4 AutoCAD commands with small description. [4]
   c) State the functions of the following G & M codes:
   (i) G01 (ii) G03 (iii) M03 (iv) M06 [4]
   d) What is the need of part analysis? [3]
   e) What is the role of computers in quality control? [3]
   f) State the objectives of CIM system. [4]

PART–B *(3x16 = 48 Marks)*

2. a) Explain about the following 3D transformations:
   (i) Translation (ii) Rotation [8]
   b) Briefly describe the types of storage devices used in computers. [8]

3. a) What are the requirements of geometric modeling? [8]
   b) Describe the features of a Drafting package. [8]

4. a) What is part programming and write its types. [8]
   b) Differentiate CNC and DNC control systems. [8]

5. a) How do you overcome the difficulties in traditional process planning by adopting CAPP method? [8]
   b) Discuss the advantage and disadvantages of OPITZ code system. [8]

6. a) Explain the procedure for integrating CAQC with CAD/CAM. [8]
   b) What are the instrumentation required for computer aided inspection? [8]

7. a) What is Material requirement planning? Explain the structure of MRP system. [8]
   b) Why are the unskilled labors replaced with skilled labors in computer integrated manufacturing systems? [8]

Code No: **RT41032** **R13** **Set No. 4**

IV B.Tech I Semester Regular/Supplementary Examinations, Oct/Nov - 2018

CAD/CAM

(Common to Automobile Engineering and Mechanical 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 THREE questions from Part-B
*****

PART–A *(22 Marks)*

1. a) List out input and output devices of CAD. [3]
   b) Differentiate between wire frame modeling and surface modeling. [4]
   c) Differentiate NC and CNC. [4]
   d) What are the various approaches available for CAPP? [3]
   e) Define off-line and on-line inspections. [4]
   f) What are the benefits of CIM? [4]

PART–B *(3x16 = 48 Marks)*

2. a) Write the 3-D transformation matrices for rotation, scaling, translation & Mirroring in homogeneous coordinates. [8]
   b) Briefly explain the concept of various coordinate systems required for geometric display systems. [8]

3. a) Find the equation of a Bezier curve which is defined by four control points as (80,30,0), (100,100,0),(200,100,0) and (250,30,0). [8]
   b) What types of typical dimensioning facilities are available in a drafting system? [8]

4. Prepare a computer aided part program (APT) to finish the profile of the part shown in figure 4 (a) below.

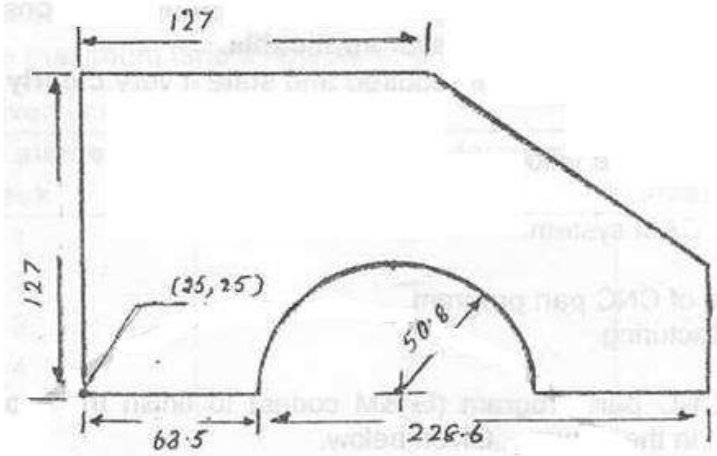

Figure 4(a)

[16]

5. a) Explain MICLASS coding system in GT. [8]
   b) What is a production Flow Analysis? Discuss various steps involved in PFA. [8]

6. a) Define computer aided quality control. Explain how it is implemented. [8]
   b) Explain any one non contact inspection technique with neat sketch. [8]

7. a) What are the three major elements of an AS/RS? Explain [8]
   b) Explain the different types of computer control systems used in CIM. [8]