



# INSTITUTE OF AERONAUTICAL ENGINEERING

(Autonomous)

Dundigal, Hyderabad-500043

## AERONAUTICAL ENGINEERING

### ASSIGNMENT QUESTIONS

Course Title	CAD/CAM			
Course Code	A70328-R15			
Class	IV B.TECH I Sem			
Course Structure	Lectures	Tutorials	Practicals	Credits
	3	1	-	4
Course Coordinator	Dr. D. Govardhan, Professor, Aeronautical Engineering.			
Team of Instructors	Dr. D. Govardhan, Professor, Aeronautical Engineering. Mr. Suresh Kumar R, Assistant Professor, Aeronautical Engineering.			

### COURSE OBJECTIVES

To meet the challenge of ensuring excellence in engineering education, the issue of quality needs to be addressed, debated and taken forward in a systematic manner. Accreditation is the principal means of quality assurance in higher education. The major emphasis of accreditation process is to measure the outcomes of the program that is being accredited.

In line with this, Faculty of Institute of Aeronautical Engineering, Hyderabad has taken a lead in incorporating philosophy of outcome based education in the process of problem solving and career development. So, all students of the institute should understand the depth and approach of course to be taught through this question bank, which will enhance learner's learning process.

### ASSIGNMENT - I

UNIT-I FUNDAMENTALS OF CAD CAM			
S.No	Questions	Blooms Taxonomy Level	Course Outcomes
1.	Describe the various types of semiconductor memory devices used in Microcomputers.	Remember	1
2.	Summarize your understanding of synthesis and engineering analysis in the field of design. Explain how CAD helps to synthesize a product design and do engineering analysis for getting optimal design.	Understand	2

3.	Explain how an image is generated and maintained in a direct beam refresh terminal. Describe a digitizer. Explain how it can be used for transferring paper drawing to CAD system.	Understand	3
4.	Explain the different types of product cycles with the help of flowcharts. Explain the different stages in a design process using a flowchart.	Understand	3
5.	Summarize your understanding of synthesis and engineering analysis in the field of design. Explain how CAD helps to synthesize a product design and do engineering analysis for getting optimal design.	Remember	4
6.	Define Bezier curve and Discuss the important characteristics of a Bezier curve.	Understand	5
7.	Explain with suitable flow diagram the various steps involved in Design process.	Remember	5
8.	Briefly write about the secondary storage devices used in CAD System. Describe the basic requirements that a CAD software has to satisfy.	Understand	3
9.	Discuss the various types of curve fitting techniques in detail.	Remember	4
10.	Draw & Explain the block diagram of product cycles in a computerized manufacture environment.	Understand	5

## UNIT-II

### SURFACE MODELING

S.No	Questions	Blooms Taxonomy Level	Course Outcomes
1.	Explain the properties of Bezier curve with suitable sketch.	Understand	5
2.	A scaling factor of 2 is applied in the Y direction while no scaling is applied in the X direction to the line whose two end points are at coordinates (1, 3) and (3,6). The line is to be rotated subsequently through 300, in the counter clockwise direction. Determine the necessary transformation matrix for the operation and the new coordinates of the end points.	Remember	6
3.	Explain in detail the properties of Bezier curve with suitable sketch.	Understand	6
4.	Deduce the condition for C0 and C1 continuity in a cubic Bezier composite surface of two patches	Remember	7
5.	Describe with the help of neat sketches the major surface entities provided by CAD/CAM systems.	Understand	7
6.	Explain the procedure to ensure convex hull property in Bezier surface. Describe the effect of characteristic polyhedron over the resulting Bezier surface.	Remember	7
7.	Explain the blending functions required in practical solid modeling Applications.	Understand	7

8	Distinguish between Boundary representation and CSG in solid modeling	Remember	8
9	Describe the Euler Point care for boundary representation of solid modeling with example.	Understand	8
10	Discuss blending function. Explain re parameterization of a surface.	Remember	8
<b>UNIT-III</b>			
<b>NC CONTROL PRODUCTION SYSTEMS</b>			
1.	What is NC. Discuss the various elements of NC machine	Remember	9
2.	Draw a suitable sketch for the length of a MS flat having the size 10mm x 200mm x 200mm with array of 25 through holes of diameter 10mm in 5 rows and 5 column maintaining an edge distance of 20mm from all corners the corners. Write the NC Programme for drilling the holes on the XY plane of the plate using canned cycles with a spindle speed of 600 rpm and feed rate of 3 mm per minute. Assume remaining data.	Remember	9
3.	Design the Manual Part Programming manuscript sheet and explain how the entries are made in the sheet with the help of an example.	Understand	9
4.	Discuss the salient features of a machining center.	Remember	10
5.	Design the block diagram of Adaptive Control Machining System and explain briefly.	Understand	11
<b>ASSIGNMENT - II</b>			
1.	Write the APT programme for MS flat having the size 10mm x 200mm x 200mm with array of 25 through holes of diameter 10mm in 5 rows and 5 column maintaining an edge distance of 20mm from all corners the corners. Write the NC Programme for drilling the holes on the XY plane of the plate using canned cycles with a spindle speed of 600 rpm and feed rate of 3 mm per minute. Assume remaining data.	Remember	12
2.	Discuss the several word functions in Numerical Control systems. Discuss the advantages of DNC over NC/CNC.	Remember	12
3.	Describe the axis representation system used for CNC Milling machines. Discuss the various interpolation methods used in NC machines.	Understand	13
4.	Discuss the special features of NC machine tool when compared to the conventional machine tools	Remember	14
5.	Design the block diagram of Adaptive Control Machining System and explain briefly.	Understand	14

<b>UNIT-IV</b>			
<b>GROUP TECHNOLOGY</b>			
1.	Discuss the different stages of a group technology plan. Discuss the types of work that are to be conducted at each stage of the plan.	Understand	13
2.	Apply the rank order clustering technique to the following part-incidence matrix to group parts into part families.(Minimum duplication of machines is allowed).	Remember	13
3.	Distinguish between MRP,MRPII,CRP & ERP	Understand	14
4.	Explain briefly any two types of coding Systems	Understand	14
5.	Explain the steps involved in Production flow analysis. Explain the reason to carry out such analysis.	Remember	13
6.	Describe the Opitz classification system in detail.	Understand	12
7.	Explain machine cell design in group technology. Compare a process-type layout and group technology layout for batch production of a simple component.	Understand	12
8.	Explain the CODE system of coding used in Group Technology.	Remember	13
9.	Explain the retrieval type process planning system with the help of a block diagram.	Understand	14
10.	Discuss about the various inputs and outputs of MRP systems in detail.	Understand	14
<b>UNIT-V</b>			
<b>FLEXIBLE MANUFACTURING SYSTEM</b>			
S. No	Questions	Blooms Taxonomy level	Course Outcomes
1.	What are major advantages and applications of computer aided quality control over manual quality control	Understand	14
2.	Describe essential FMS control systems. And Discuss Analysis methods of FMS	Remember	12
3.	Discuss the various Types of inspection methods and List out the advantages of CMM.	Remember	13
4.	What is meant by CIM. Draw the CIM Wheel indicating its components and list outthe advantages of CIM.	Understand	13
5.	Describe a materials handling and system and explain the three any materials handling systemDescribe the functions performed by the FMS control System.	Understand	13
6.	Write the two important approaches for machine cell formation and explain.	Remember	14
7.	Discuss the objectives and benefits of CAQC. Explain the different computer aided inspection methods	Remember	14
8.	Discuss and describe the various Analysis Methods for FMS.	Understand	15

9.	Explain the different types of CMM and its essential components with their functions with a neat sketch.	Understand	15
10.	Evaluate which type of production systems, FMS is applied to. Discuss the advantages of FMS.	Remember	15

Prepared by:

Dr. D Govardhan, Professor.

Mr. Suresh Kumar R, Assistant Professor.

**HOD, AE**