INSTITUTE OF AERONAUTICAL ENGINEERING

(Autonomous)

Dundigal, Hyderabad-500043

MECHANICAL ENGINEERING

TUTORIAL QUESTION BANK

Course Title	COMPUTER AIDED DESIGNING/ COMPUTER AIDED MANUFACTURING				
Course Code	AME018				
Programme	B.Tech				
Semester	VII	ME			
Course Type	Core				
Regulation	IARE - R16				
Course Structure		**Theory**		**Practical**	
	Lectures	**Tutorials**	**Credits**	**Laboratory**	**Credits**
	3	-	3	-	-
Chief Coordinator	Mr. M. Sunil Kumar , Assistant Professor				
Course Faculty	Dr. K. Raghu Ram Mohan Reddy, Professor				

COURSE OBJECTIVES:

The course should enable the students to:

I	Understand the concepts of implementation of automation and PLMS in industries practicing CIM.
II	Recognize the need of computer graphics in seamless manufacturing environment.
III	Summarize the historical development o CAD/CAM software and CNC Technology.
IV	Categorize the creation of group technology of part families and end-end utility.

COURSE OUTCOMES (COs):

CO 1	Understand the basic foundation in computer aided design / manufacturing
CO 2	Understand the fundamentals used to create and manipulate geometric models
CO 3	Learn working principles of NC machines CNC control and part programming
CO 4	Understand concept of Group Technology, FMS, CAPP.
CO 5	Understand the concept of Computer integrated manufacturing.

COURSE LEARNING OUTCOMES (CLO'S):

Students, who complete the course, will have demonstrated the ability to do the following:

AME018.01	Describe basic structure of CAD workstation, Memory types, input/output devices and display devices and computer graphics.
AME018.02	Demonstrate the ability to create concepts design solutions through CAD tools that can be manufactured using CNC machinery.
AME018.03	Understand the Computers in industrial manufacturing, product cycle, CAD / CAM Hardware.
AME018.04	Generate and interpret engineering technical drawings of parts and assemblies according to engineering design standards.
AME018.05	Understand of the principles of CAD/CAM, including engineering drawing, geometric and surface modeling, and feature-based design.
AME018.06	Create accurate and precise geometry of complex engineering systems and use the geometric models in different engineering applications.
AME018.07	Compare the different types of modeling techniques and explain the central role solid models play in the successful completion of CAD/CAM-based product development.
AME018.08	Explain Synthetic curves and the concept of NURBS
AME018.09	Explain the basic concepts of CNC programming and machining
AME018.10	Develop CNC programs to manufacture industrial components.
AME018.11	Generate tool path for part and to create CNC manual part program and APT part program
AME018.12	Apply the concepts of machining for the purpose of selection of appropriate machining centers, machining parameters, select appropriate cutting tools for CNC milling and turning.
AME018.13	Understand grouping of similar parts through group technology and developing automated process plans through computer aided process planning.
AME018.14	Illustrate group technology, computer aided quality control.
AME018.15	Understand different elements of robotic systems. Also understand the different components and design of FMS.
AME018.16	Apply the contact and non-contact types inspection with computer aided testing with integration of computer aided quality with CAD/CAM
AME018.17	Understand automated material handling systems and integration of material handling and storage
AME018.18	Analyze various automated flow lines and line balancing problem.
AME018.19	Design automated material handling and storage systems for a typical production system
AME018.20	Apply the concepts/components of computer integrated manufacturing and integrate them.
AME018.21	Understand data management and its important for decision making in computer integrated manufacturing system.

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	UNIT – I			
	FUNDAMENTALS CONCEPTS IN CAD			
	PART – A (SHORT ANSWER QUESTIONS)			
S No	**QUESTION**	**Blooms Taxonomy Level**	**Course Outcome**	**Course Learning Outcomes**
1	Explain about the memory devices used in NC, CNC and DNC machines.	Understand	CO 1	AME018.01
2	What is raster scan graphics system.	Remember	CO 1	AME018.01
3	What is the software configuration of a graphics system.	Remember	CO 1	AME018.01
4	How does a CRT work.	Understand	CO 1	AME018.01
5	List the applications of computer graphics.	Understand	CO 1	AME018.01
6	Give a brief note on storage devices.	Understand	CO 1	AME018.05
7	List the different types of industrial manufacturing.	Understand	CO 1	AME018.02
8	Briefly describe the types of storage devices used in computers.	Understand	CO 1	AME018.01
9	What do you understand by the CPU?	Remember	CO 1	AME018.02
10	What is the software configuration of a graphics system	Remember	CO 1	AME018.03
11	List the advantages of computer aided design and Manufacturing	Understand	CO 1	AME018.01
12	Define the terms CAD and CAM.	Understand	CO 1	AME018.01
13	What are the benefits of computer aided design over conventional design process.	Understand	CO 1	AME018.03
14	List out the various applications in CAD/CAM.	Understand	CO 1	AME018.01
15	Identify the types of printers that would be useful for printing graphic information.	Remember	CO 1	AME018.01
16	Describe the various types input devices used in CAD Work station.	Remember	CO 1	AME018.01
17	Briefly Explain the conventional process of the product cycle in the conventional manufacturing environment.	Understand	CO 1	AME018.01
18	Explain the computer aided design process with the help of block diagram.	Understand	CO 1	AME018.01
19	List out the various types of Graphical Terminals in CAD systems and explain any one.	Understand	CO 1	AME018.05
20	What is clipping. Explain with a diagram.	Understand	CO 1	AME018.02
21	Discuss the concept of hidden line removal method and shading.	Remember	CO 1	AME018.01
	PART – B (LONG ANSWER QUESTIONS)			
1	Briefly explain the conventional process of the product cycle in the conventional manufacturing environment.	Understand	CO 1	AME018.01
2	What are the designs related tasks performed by modern computer? Explain with block diagram.	Remember	CO 1	AME018.01
3	Discuss various CAD input devices with suitable diagrams.	Remember	CO 1	AME018.02
4	Describe the various types input devices used in CAD Work station.	Understand	CO 1	AME018.01
5	Describe the product cycle followed in a CAD/CAM system.	Understand	CO 1	AME018.03
6	Elaborate on the basic requirements that CAD software has to satisfy.	Understand	CO 1	AME018.03
7	What are the functions of an interactive graphic design workstation?	Understand	CO 1	AME018.01

8	How the product cycle is revised with introduction of CAD/CAM.	Remember	CO 1	AME018.01
9	What are the various memories used in a computer?	Remember	CO 1	AME018.02
10	Discuss various CAD input devices with suitable diagrams.	Understand	CO 1	AME018.03
11	Write briefly about the secondary storage devices used in CAD System.	Understand	CO 1	AME018.01
12	Describe the basic requirements that CAD software has to satisfy.	Remember	CO 1	AME018.01
13	Draw and explain the block diagram of product cycles in a computerized manufacture environment.	Remember	CO 1	AME018.02
14	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	CO 1	AME018.01
15	Briefly Explain the conventional process of the product cycle in the conventional manufacturing environment.	Understand	CO 1	AME018.03
16	Explain the computer aided design process with the help of block diagram.	Understand	CO 1	AME018.03
17	List out the various types of Graphical Terminals in CAD systems and explain any one.	Understand	CO 1	AME018.01
18	What are the different graphic display devices. Explain at least two display devices in detail.	Understand	CO 1	AME018.01
19	What is transformation. How many types of transformation are there to change geometry.	Remember	CO 1	AME018.01
20	Explain the concept of obtaining reflection about an arbitrary line starting from plane reflection about an axis. How do you obtain the orthographic projection of geometric database.	Understand	CO 1	AME018.01
21	Explain the concept of concatenation of transformation of matrices using suitable 2D example.	Remember	CO 1	AME018.01

<div align="center">**PART – C (ANALYTICAL QUESTIONS)**</div>

1	Represent a circle with center (0,0) and radius of 50mm through the implicit form as well as the parametric form.	Understand	CO 1	AME018.02
2	Describe the various types input devices used in CAD Work station.	Remember	CO 1	AME018.02
3	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	CO 1	AME018.02
4	Define Bezier curve and Discuss the important characteristics of a Bezier curve.	Understand	CO 1	AME018.03
5	Explain with suitable flow diagram the various steps involved in Design process.	Understand	CO 1	AME018.02
6	List the advantages of computer aided design. State clearly the difficulties a design engineer has to face at each of the design stages if they are carried out manually.	Understand	CO 1	AME018.02
7	Discuss the different types of curvature continuity with suitable sketches.	Understand	CO 1	AME018.02
8	Write briefly about the secondary storage devices used in CAD System. Describe the basic requirements that CAD software has to satisfy.	Remember	CO 1	AME018.02
9	Discuss the various types of curve fitting techniques in detail.	Remember	CO 1	AME018.01
10	Draw and explain the block diagram of product cycles in a computerized manufacture environment.	Understand	CO 1	AME018.02

<div align="center">**UNIT – II**</div>

<div align="center">**GEOMETRICAL MODELLING AND DRAFTING SYSTEMS**</div>

<div align="center">**PART – A (SHORT ANSWER QUESTIONS)**</div>

1	Explain the characteristics of Bezier curve?	Understand	CO 2	AME018.05

2	Write a brief note on solid 5modeling.	Remember	CO 2	AME018.05
3	Explain the characteristics of Bezier curve?	Remember	CO 2	AME018.06
4	Explain the details of polygon clipping.	Understand	CO 2	AME018.07
5	Explain Boundary representation modeling.	Understand	CO 2	AME018.05
6	Write a note on: i. NURBS ii B-splines.	Understand	CO 2	AME018.08
7	Explain re-parameterization of a surface	Remember	CO 2	AME018.06
8	Explain the concept of parametric surface and Discuss the various boundary conditions of parametric surface	Understand	CO 2	AME018.06
9	Distinguish between Synthetic and analytical surfaces	Remember	CO 2	AME018.05
10	List out the three modeling schemes.	Remember	CO 2	AME018.05
11	Give difference between synthetic and analytical curve.	Remember	CO 2	AME018.05
12	Write parametric equation of Hermite Cubic curve.	Remember	CO 2	AME018.06
13	Explain re-parameterization of a surface	Understand	CO 2	AME018.07
14	Differentiate between weighing function and blending function	Understand	CO 2	AME018.05
15	Describe the mathematical representation and application of ruled surface.	Understand	CO 2	AME018.08
16	Distinguish between Boundary representation and CSG in solid modeling	Remember	CO 2	AME018.06
17	Discuss blending function. Explain re parameterization of a surface.	Understand	CO 2	AME018.06
18	Distinguish between Geometry and Topology	Remember	CO 2	AME018.05
19	Name different types of Analytical surfaces and synthetic surfaces.	Remember	CO 2	AME018.05
20	Distinguish between geometric form and algebraic form of surface representation	Remember	CO 2	AME018.05

PART - B (LONG ANSWER QUESTIONS)

1	Give the details of Z-buffer method for hidden surface removal	Understand	CO 2	AME018.05
2	Define the cubic spline and Bezier curves. Which of them is more popular in CAD and why?	Remember	CO 2	AME018.05
3	Give details of a few editing commands used in a drafting system.	Remember	CO 2	AME018.06
4	Explain 3-D scaling, rotation, reflection and translation with suitable example?	Understand	CO 2	AME018.05
5	What is the need for concatenation of transformations? Explain what care should be taken in such cases.	Understand	CO 2	AME018.05
6	Explain the details of polygon clipping. Give its advantages compared to the line clipping	Understand	CO 2	AME018.07
7	Explain constructive solid geometry modeling techniques in detail with example?	Understand	CO 2	AME018.07
8	What is the need for concatenation of transformations? Explain what care should be taken in such cases.	Remember	CO 2	AME018.06
9	What are the functions of an interactive graphic design workstation?	Remember	CO 2	AME018.06
10	What is meant by a Geometric Entity? Explain the common entities used in Geometric Modeling.	Understand	CO 2	AME018.06
11	Explain the procedure of parametric representation of B-spline curves.	Understand	CO 2	AME018.05
12	Write the brief note on the parametric representation of a Bezier curve.	Understand	CO 2	AME018.07
13	Write the mathematical representation of a cylindrical surface and its applications.	Understand	CO 2	AME018.07
14	Explain the types of surfaces that CAD/CAM systems use. Distinguish between analytical and synthetic surface	Remember	CO 2	AME018.06
15	Explain the procedure to ensure convex hull property in Bezier surface. Describe the effect of characteristic polyhedron over the resulting Bezier surface.	Remember	CO 2	AME018.06
16	Explain the blending functions required in practical solid modeling applications.	Understand	CO 2	AME018.06

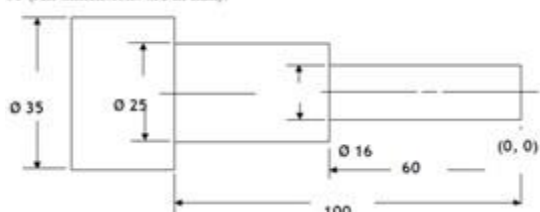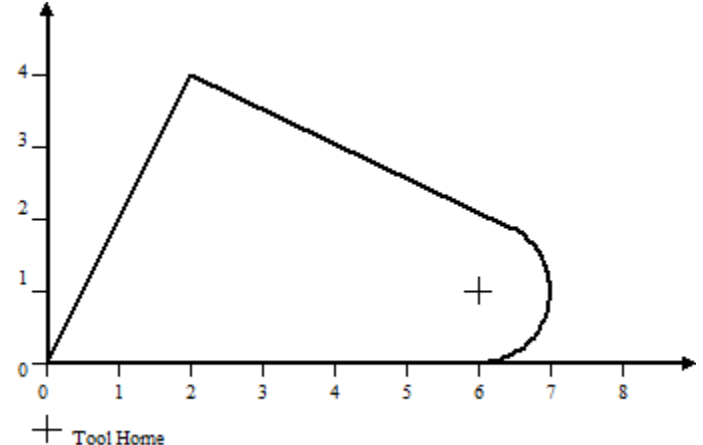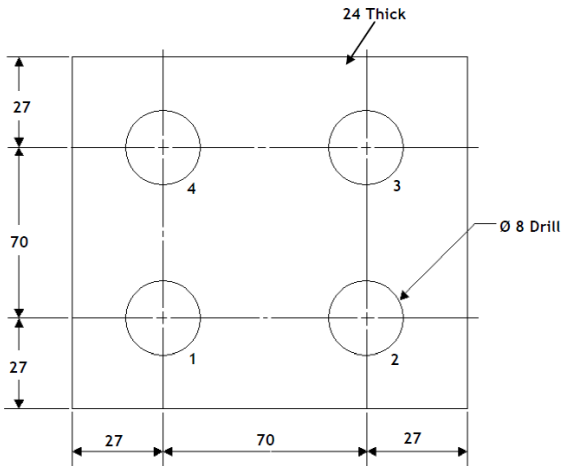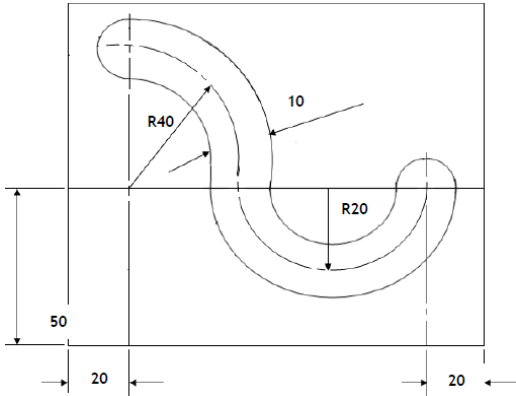| 17	Deduce the condition for C0 and C1 continuity in a cubic Bezier composite surface of two patches.	Understand	CO 2	AME018.05
18	Explain different methods of solid modeling using sweeping.	Understand	CO 2	AME018.07
19	Differentiate between Bezier and B- spline surface with reference to number of Control points, order of continuity and surface normal.	Understand	CO 2	AME018.07
20	Deduce the condition for C0 and C1 continuity in a cubic Bezier composite surface of two patches.	Remember	CO 2	AME018.06
	Part - C (ANALYTICAL QUESTIONS)			
1	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 endpoints 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	Understand	CO 2	AME018.07
2	Find the transformed coordinates when a square [(1, 1), (2, 1), (1, 2) and (2, 2)] is rotated by 90° anticlockwise about a line passing through one of its vertex (1, 1) and parallel to x-axis?	Remember	CO 2	AME018.07
3	Find the transformed coordinates when a line [(3, 4), (4, 2),] is rotated about a z axis by an angle of 45° in anticlockwise direction?	Remember	CO 2	AME018.06
4	Find the degree of Bezier curve controlled by three points (4, 2), (0, 0) and (2, 8). Also find the equation of the Bezier curve in parametric format with parameter "μ"?	Understand	CO 2	AME018.05
5	What do you understand by Geometric transformation? Explain any three common transformations used in computer graphics.	Remember	CO 2	AME018.06
6	Differentiate between Bezier and B-spline surface with reference to number of control points, order of continuity and surface normal.	Remember	CO 2	AME018.06
7	Discuss blending function. Explain re parameterization of a surface	Understand	CO 2	AME018.05
8	Deduce the condition for C0 and C1 continuity in a cubic Bezier composite surface of two patches	Understand	CO 2	AME018.06
9	Explain the concept of parametric surface and Discuss the various boundary conditions of parametric surface	Understand	CO 2	AME018.07
10	Explain the procedure to ensure convex hull property in Bezier surface Describe the effect of characteristic polyhedron over the resulting Bezier surface.	Remember	CO 2	AME018.08

UNIT-III

COMPUTER AIDED MANUFACTURING
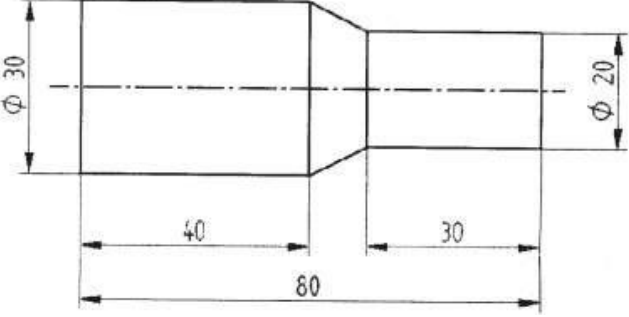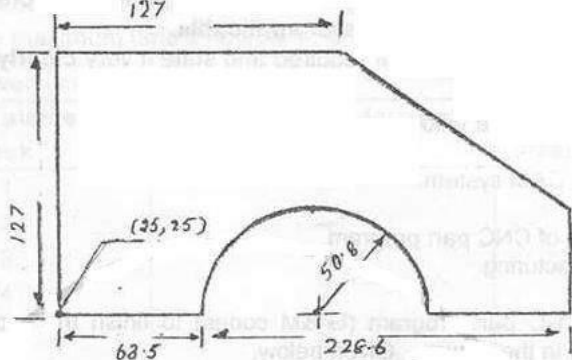
PART – A (SHORT ANSWER QUESTIONS)

1	Discuss briefly the NC coordinate systems.	Understand	CO 3	AME018.09
2	Discuss the merits and demerits of NC system.	Remember	CO 3	AME018.09
3	Explain the features of CNC Machine Centre	Remember	CO 3	AME018.10
4	Design the Manual Part Programming manuscript sheet and explain how the entries are made in the sheet with the help of an example.	Understand	CO 3	AME018.10
5	Discuss the salient features of a machining center.	Understand	CO 3	AME018.09
6	Design the block diagram of Adaptive Control Machining System and explain briefly.	Understand	CO 3	AME018.09
7	Explain adaptive control system. Discuss its advantages to the manufacturing technology.	Understand	CO 3	AME018.09
8	Explain the various important statements in APT language.	Understand	CO 3	AME018.09
9	Compare between NC, DNC and CNC machines.	Understand	CO 3	AME018.09

10	Discuss briefly the NC coordinate systems.	Remember	CO 3	AME018.11
11	Discuss the merits and demerits of NC system.	Remember	CO 3	AME018.11
12	Explain the features of CNC Machine Centre	Understand	CO 3	AME018.12
13	Design the Manual Part Programming manuscript sheet and explain how the entries are made in the sheet with the help of an example.	Understand	CO 3	AME018.11
14	Discuss the salient features of a machining center.	Understand	CO 3	AME018.12
15	Design the block diagram of Adaptive Control Machining System and explain briefly.	Remember	CO 3	AME018.11
16	Explain the various important statements in APT language.	Remember	CO 3	AME018.10
15	Compare between NC, DNC and CNC machines.	Remember	CO 3	AME018.11
17	Discuss briefly the NC coordinate systems.	Understand	CO 3	AME018.12
18	Discuss the merits and demerits of NC system.	Understand	CO 3	AME018.11
19	Explain the features of CNC Machine Centre	Understand	CO 3	AME018.12
20	Design the manual part programming manuscript sheet and explain how the entries are made in the sheet with the help of an example.	Understand	CO 3	AME018.10
22	Discuss the salient features of a machining center.	Understand	CO 3	AME018.10
PART – B (LONG ANSWER QUESTIONS)				
1	Explain adaptive control system. Discuss its advantages to the manufacturing technology.	Understand	CO 3	AME018.09
2	Explain the various important statements in APT language.	Remember	CO 3	AME018.10
3	What are the basic components of NC system and explain the function of each component.	Understand	CO 3	AME018.09
4	Sketch and explain DNC setup. Discuss briefly the NC coordinate systems.	Remember	CO 3	AME018.09
5	Discuss the CNC and manual part programming methods.	Remember	CO 3	AME018.11
6	What are the different types of contouring system in a CNC machine? Explain with neat sketches.	Understand	CO 3	AME018.09
7	Design the Manual Part Programming manuscript sheet and explain how the entries are made in the sheet with the help of an example.	Understand	CO 3	AME018.09
8	Discuss the salient features of a machining center.	Understand	CO 3	AME018.10
9	Design the block diagram of Adaptive Control Machining System and explain briefly.	Understand	CO 3	AME018.11
10	What is the importance of G-codes in part programming? Give examples	Understand	CO 3	AME018.09
11	Describe the types of electrical drives used for speed and feed control in CNC machine tools.	Understand	CO 3	AME018.09
12	What is the importance of G-codes in part programming? Give examples.	Understand	CO 3	AME018.10
13	Explain various types of input devices used in modern CNC controller for loading programs.	Understand	CO 3	AME018.10
14	What is meant by the DNC? Discuss how it is different from CNC	Remember	CO 3	AME018.09
15	Distinguish between point-to-point control and continuous path control in NC system	Remember	CO 3	AME018.09
16	With a block diagram, explain the various sub-systems and functions of a modern CNC controller.	Remember	CO 3	AME018.09
17	What is a machining centre? How it differs from conventional CNC milling machine?	Remember	CO 3	AME018.09
18	What are NC machine tools? Discuss features, basic components and co-ordinate system of NC machine tools.	Understand	CO 3	AME018.09
19	Design the Manual Part Programming manuscript sheet and explain how the entries are made in the sheet with the help of an example.	Understand	CO 3	AME018.10

20	Discuss the several word functions in Numerical Control systems. Discuss the advantages of DNC over NC/CNC.	Understand	CO 3	AME018.10
PART - C (ANALYTICAL QUESTIONS)				
1	Discuss the difficulties encountered in using conventional numerical control. Enumerate the advantages of Computer Assisted Part Programming when compared to Manual Part Programming.	Understand	CO 3	AME018.09
2	Describe the axis representation system used for CNC Milling machines. Discuss the various interpolation methods used in NC machines.	Understand	CO 3	AME018.09
3	Discuss the several word functions in Numerical Control systems. Discuss the advantages of DNC over NC/CNC.	Understand	CO 3	AME018.11
4	Differentiate between i. Absolute and Incremental positioning system. ii. Fixed and Floating zero method.	Understand	CO 3	AME018.10
5	Discuss the special features of NC machine tool when compared to the conventional machine tools	Understand	CO 3	AME018.11
6	Explain any two important DNC system architecture	Understand	CO 3	AME018.10
7	Generate a CNC Turning Programing for the figure 1 Figure 1	Understand	CO 3	AME018.11
8	An APT program for the profiling of the part in Figure 2 is to be generated. The processing parameters are: (a) feed rate is 5.39 inches per minute; (b) spindle speed is 573 revolutions per minute; (c) a coolant is to be used to flush the chips; (d) the cutter diameter is to be 0.5 inches, and (e) the tool home position is (0, -1,0). Figure 2. APT Program Workpiece	Understand	CO 3	AME018.09

9	Generate CNC drilling Programming for the Figure 3 using canned cycles. The spindle Speed is 800rpm and feed rate is 10 mm/minute. The thickness of plate is 10mm.	Understand	CO 3	AME018.10

Figure:3

10	Generate a CNC milling Programming for the Figure 4	Understand	CO 3	AME018.08

Figure 4

11	What is right hand rule in NC where it is used?	Understand	CO 3	AME018.09
12	Discuss the concept of adaptive control and also explain its types.	Understand	CO 3	AME018.09
13	Discuss the concept of adaptive control and also explain its types. Differentiate CNC and DNC control systems.	Understand	CO 3	AME018.09

14	Write a part program for the component shown in figure 4 (b) below :	Understand	CO 3	AME018.09
	Work Material: mild steel Work size : 32 mm diameter Length: 90 mm Speed: 800 R.P.M Feed: 200 mm/min Depth of cut: 2 mm Assume other data.			
15	Prepare a computer aided part program (APT) to finish the profile of the part shown in figure 4 (a) below. Figure 4(a)	Understand	CO 3	AME018.09

UNIT – IV
GROUP TECHNOLOGY, CAPP AND CAQC
PART – A (SHORT ANSWER QUESTIONS)

1	Enumerate the advantages of group technology.	Remember	CO 4	AME018.13
2	What are various languages used in GT?	Understand	CO 4	AME018.13
3	Explain the importance of CAPP in automation?	Understand	CO 4	AME018.14
4	Differentiate contact and non-contact type CAQC systems? With examples.	Remember	CO 4	AME018.14
5	What are the various computer aided tests used in CAQC?	Remember	CO 4	AME018.13
6	Differentiate generative and retrieval type CAPP systems?	Remember	CO 4	AME018.14
7	Define the terms precision and accuracy.	Understand	CO 4	AME018.14
8	Explain with neat sketch about Retrieval CAPP system.	Understand	CO 4	AME018.17
9	What is a part family? Explain various methods of part formation.	Understand	CO 4	AME018.14
10	What do you understand by Computer Aided Process Planning?	Understand	CO 4	AME018.17

	PART – B (LONG ANSWER QUESTIONS)			
1	Discuss how part classification is done in the context of GT.	Understand	CO 4	AME018.13
2	Discuss the advantage and disadvantages of OPITZ code system.	Understand	CO 4	AME018.14
3	What is group technology? Discuss machine cell design in G.T.?	Remember	CO 4	AME018.13
4	Write about Hybrid CAPP.	Remember	CO 4	AME018.14
5	What are part families in group technology? Discuss machine cell design in GT.	Understand	CO 4	AME018.14
6	Compare a process type layout and group technology layout for batch production of a simple component.	Remember	CO 4	AME018.14
7	Discuss how part classification is done in the context of GT.	Understand	CO 4	AME018.14
8	Explain MICLASS coding system in GT.	Understand	CO 4	AME018.14
9	How do you overcome the difficulties in traditional process planning by adopting CAPP method?	Understand	CO 4	AME018.17
10	What is computer aided process planning? Discuss variant process planning in detail with an example?	Remember	CO 4	AME018.17
11	Write briefly on contact inspection methods? Explain the need for automated inspection strategies in manufacturing plant	Remember	CO 4	AME018.16
12	Discuss the concept and benefits of CAPP and also explain its types.	Understand	CO 4	AME018.14
13	Discuss the different types of CAPP systems available in the market based on retrieval and generative types CAPP.	Remember	CO 4	AME018.14
14	Explain about contact and non-contact inspection method in detail. Write down merits.	Understand	CO 4	AME018.14
15	Explain computer aided testing in quality control. Explain in detail.	Understand	CO 4	AME018.14
16	Explain integration of computer quality with CAD/CAM.	Understand	CO 4	AME018.17
17	What is computer aided process planning (CAPP)? Discuss the data selection system in CAPP.	Remember	CO 4	AME018.17
18	Explain retrieval and generative type in computer aided process planning.	Remember	CO 4	AME018.16
19	Explain optical inspection in detail. Explain integration of CAQC with CAD/CAM.	Understand	CO 4	AME018.14
20	Explain the steps involved in Production flow analysis. Explain the reason to carry out such analysis.	Remember	CO 4	AME018.14
	PART - C (ANALYTICAL QUESTIONS)			
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	CO 4	AME018.14
2	Explain the application and advantages of integration of CAQC with CAD/CAM systems	Understand	CO 4	AME018.15
3	Explain in detail the scanning laser system used in computer aided quality control	Understand	CO 4	AME018.16
4	Discuss the objectives of CAQC. Explain the different computer aided inspection methods	Understand	CO 4	AME018.16
5	Explain the application and advantages of integration of CAQC with CAD/CAM systems	Understand	CO 4	AME018.16
6	What is meant by a part family in Group Technology? Name and explain three parts classification and coding systems commonly used in GT.	Understand	CO 4	AME018.14
7	What is computer aided process planning? Discuss variant process planning in detail with an example?	Understand	CO 4	AME018.17
8	Explain one non-contact and one non optical inspection method with sketch.	Understand	CO 4	AME018.16
9	Explain the need for automated inspection strategies in a manufacturing plant.	Understand	CO 4	AME018.16

10	Compare and contrast, contact and non-contact inspection techniques.	Understand	CO 4	AME018.16

		UNIT-V		
		COMPUTER INTEGRATED MANUFACTURING SYSTEM		
		PART - A (SHORT ANSWER QUESTIONS)		
1	State the objectives of CIM system.	Understand	CO 5	AME018.20
2	Distinguish between CIM and CAD / CAM.	Understand	CO 5	AME018.21
3	Explain the benefits of CIM?	Understand	CO 5	AME018.20
4	What are the components of CIM wheel?	Remember	CO 5	AME018.21
5	What are the major contribution of the computer in a CIM system	Understand	CO 5	AME018.21
6	Discuss the importance of Resource requirement planning.	Understand	CO 5	AME018.20
7	What are the four basic components of a CIM system?	Remember	CO 5	AME018.21
8	Give the benefits of computer integrated manufacturing system.	Understand	CO 5	AME018.21
9	Describe hardware configuration of CIM with the help of a sketch.	Understand	CO 5	AME018.21
10	How does CIM integrate all the activities of Industry? Explain.	Understand	CO 5	AME018.20
11	Explain the important components in CIM.	Remember	CO 5	AME018.21
12	List the applications of CIM.	Understand	CO 5	AME018.21
13	Explain CIM in terms of flexibility.	Understand	CO 5	AME018.20
14	Define computer integrated manufacturing system (CIM).	Remember	CO 5	AME018.21
15	Explain types of manufacturing system in detail.	Understand	CO 5	AME018.21
16	List out material handling systems.	Understand	CO 5	AME018.21
17	What is computer control involved in CIM.	Understand	CO 5	AME018.20
18	Explain human labor in the manufacturing systems.	Remember	CO 5	AME018.21
19	What is a CIM wheel? Sketch the CIM wheel.	Understand	CO 5	AME018.21
20	Why CIM integration of all activities of industry.	Understand	CO 5	AME018.20
	PART - B (LONG ANSWER QUESTIONS)			
1	Explain in detail the different types of database requirements in CIM. Discuss the integration of CAD database and CMM operation	Understand	CO 5	AME018.20
2	Describe hardware configuration of CIM with the help of a sketch.	Understand	CO 5	AME018.21
3	Discuss the possible computer applications in Manufacturing Planning activities.	Understand	CO 5	AME018.20
4	Discuss the role of CAPP in CIM in detail.	Understand	CO 5	AME018.21
5	Explain CIM integration of all activities of industry.	Understand	CO 5	AME018.20
6	Discuss the role of CAPP in CIM in detail.	Understand	CO 5	AME018.21
7	Discuss the possible computer applications in Manufacturing Planning activities.	Understand	CO 5	AME018.20
8	Explain CIM integration of all activities of industry.	Understand	CO 5	AME018.21
9	Explain different functions of CIM?	Understand	CO 5	AME018.20
10	Explain in detail the integration of CAD, CAM, CAE and CAPP systems in CIM Environment.	Understand	CO 5	AME018.21
11	What is the different control system used in CIM.	Understand	CO 5	AME018.20
12	Discuss the involvement of human labour in various manufacturing systems.	Understand	CO 5	AME018.21

13	Write a note on need, evolution and elements of CIM.	Understand	CO 5	AME018.20
14	Explain in the details the different data files in CIM and the system reports Generated by CIM.	Understand	CO 5	AME018.21
15	Why are the unskilled labours replaced with skilled labours in computer integrated manufacturing systems? Justify.	Understand	CO 5	AME018.20
16	Discuss its strength and weakness as an elucidator of CIM's scope.	Understand	CO 5	AME018.21
17	Discuss the possible computer applications in Manufacturing Planning activities.	Understand	CO 5	AME018.20
18	Why CIM integration of all activities of industry. Justify.	Understand	CO 5	AME018.21
19	Explain materials handling and system and explain the three any materials handling system	Understand	CO 5	AME018.20
20	Explain machine tools and related equipment's in computer integrated manufacturing	Understand	CO 5	AME018.21
<td colspan="5" align="center">**PART - C (ANALYTICAL QUESTIONS)**</td>
1	Why are the unskilled labours replaced with skilled labours in computer integrated manufacturing systems?	Understand	CO 5	AME018.20
2	Explain the different types of computer control systems used in CIM.	Understand	CO 5	AME018.21
3	What is a material requirement planning? Explain the various inputs to the MRP system?	Understand	CO 5	AME018.20
4	Explain in the details the different data files in CIM and the system reports generated by CIM.	Understand	CO 5	AME018.21
5	Describe a materials handling and system and explain the three any materials handling system	Understand	CO 5	AME018.20
6	What is a CIM wheel? Discuss its strength and weakness as an elucidator of CIM's scope.	Understand	CO 5	AME018.21
7	Describe hardware configuration of CIM with the help of sketch.	Understand	CO 5	AME018.20
8	Explain CIM integration of all activities of industry.	Understand	CO 5	AME018.21
9	Discuss the possible computer applications in Manufacturing Planning activities	Understand	CO 5	AME018.20
10	Explain the applying and advantages of integration of CIM with CAD/CAM systems	Understand	CO 5	AME018.21

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