M.Tech. II Semester End Examinations

Model Question Paper

Course Title: Advanced CNC Technologies　　　　　　**Course Code: MT201PC**

Time 　　　: 3 hours　　　　　　　　　　　　　　　　　　Max. Marks : 70

Answer any FIVE Questions

(Each question carries 14 marks)

Q. No.	Stem of the question	M	L	CO	PO
	Unit-I				
1. a)	Explain the desirable features For CNC machines	7	2	1	1
b)	Explain the classification of the NC Machines , Explain elaborately	7	2	1	1
	Unit-II				
2. a)	Give an example for MACROS and explain its Significance	7	2	2	4
b)	List out the preparatory Functions used for NC Part Programming , Explain each code	7	1	2	4
	Unit-III				
3. a)	Explain the different types of tooling materials used in CNC Machines	7	1	3	1
b)	Analyze the Working of Automatic Tool Changers in CNC Machines	7	5	3	4
	Unit-IV				
4. a)	Elaborate the required functional parameters for Adaptive control of machining operations for turning Machine	7	4	4	1
b)	How the DNC can be implemented in the Existing CNC Shop floor and List the Disadvantages of DNC	7	5	4	4
	Unit-V				
5. a)	Describe the functions of DAPP Postprocessor	7	4	5	1
b)	Justify the need for a postprocessor as used in computer assisted part programming systems such as APT	7	3	5	4
	a. Unit-I　　b. Unit-II				
6. a)	Describe the CNC Machine Components and outline each component functions	7	1	1	1
b)	List out Geometry Statements for the given fig below, in APT Part Programming Language	7	1	2	5
	a. Unit-III　　b. Unit-IV				
7. a)	Explain the significance of Modular fixtures and Automatic Head Changers used in CNC	7	3	3	5
b)	Discuss with neat block diagram for the general configuration of DNC system?	7	4	4	1
	a. Unit-V　　b. Unit-I/II/III/IV/V				
8. a)	Draw the Flow diagram for DAPP Postprocessor	7	4	5	1
b)	Summarize the various methods to improve the Accuracy of the CNC Machine	7	2	1	1

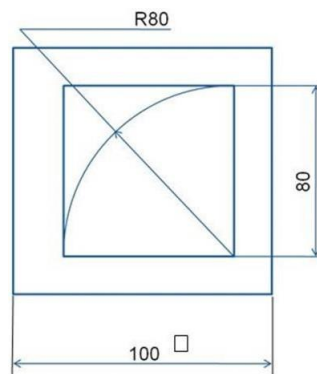M: Marks; L: Bloom's Taxonomy Level; CO: Course Outcome; PO: Programme Outcome

Fig 6.b

Course Title: Industrial Robotics   **Course Code: MT202PC**

Time   : 3 hours   Max. Marks   : 70

Answer any FIVE Questions

(Each question carries 14 marks)

Q. No.	Stem of the question	M	L	CO	PO
	Unit-I				
1. a)	Explain flexible automation with help of neat sketch.	7	2	1	1
b)	Describe permanent magnet gripper with neat sketch.	7	3	1	1
	Unit-II				
2. a)	Starting from fundamentals Derive rotation matrix about Z-axis.	7	2	2	2
b)	Find D-H matrix of 3DOF cylindrical robot arm.	7	1	2	4
	Unit-III				
3. a)	Explain Linear trajectory with parabolic blends with neat sketch.	7	2	3	2
b)	Discuss about the image data reduction in machine vision.	7	6	3	1
	Unit-IV				
4. a)	Explain branching capabilities in robot programming.	7	2	4	4
b)	Describe hydraulic actuator with neat sketch.	7	3	4	3
	Unit-V				
5. a)	With help of neat sketch, explain In-line robot cell layout.	7	1	5	1
b)	Describe the spray coating methods.	7	3	5	6
	a. Unit-I b. Unit-II				
6. a)	Illustrate SCARA configuration with neat sketch.	7	2	1	1
b)	Write guidelines for solving Inverse kinematics.	7	6	2	4
	a. Unit-III b. Unit-IV				
7. a)	Compare between joint space scheme and Cartesian space scheme	7	4	3	4
b)	Explain Absolute encoder with neat sketch.	7	1	4	3
	a. Unit-V b. Unit-I/II/III/IV/V				
8. a)	Illustrate parallel assembly system with neat sketch.	7	2	5	7
b)	Explain PTP control system.	7	2	1	1

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Course Title: Additive Manufacturing Technologies   **Course Code: MT212PE**

Time   : 3 hours   Max. Marks   : 70

Answer any FIVE Questions

(Each question carries 14 marks)

Q. No.	Stem of the question	M	L	CO	PO
	Unit-I				
1. a)	Distinguish between the additive manufacturing with conventional manufacturing.	7	4	1	1
b)	Explain in detail the process chain of additive manufacturing.	7	2	1	1
	Unit-II				
2. a)	With the help of a neat sketch, explain the procedure of solid ground curing process.	7	2	2	1
b)	Explain the working principle and procedure of fused deposition modeling process	7	2	2	1
	Unit-III				
3. a)	Describe the fused deposition modeling process.	7	2	3	1
b)	Compare the direct tooling and indirect tooling with suitable examples.	7	5	3	2
	Unit-IV				
4. a)	Evaluate the effect the problems associated with the STL format on the part manufactured.	7	5	4	2
b)	Explain the importance of various softwares used in different stages of process chain of additive manufacturing.	7	4	4	5
	Unit-V				
5. a)	List out the applications of additive manufacturing in the aerospace and automotive industries.	7	1	5	2
b)	Discuss in detail the applications of additive manufacturing in medical and bioengineering sectors.	7	2	5	2
	a. Unit-I b. Unit-II				
6. a)	Describe the four major aspects of additive manufacturing.	7	1	1	1
b)	Describe the photopolymerization process in relation to additive manufacturing.	7	2	1	1
	a. Unit-III b. Unit-IV				
7. a)	Why Selective Laser Sintering is one of the widely employed additive manufacturing process.	7	4	3	3
b)	Compare the various additive manufacturing data formats.	7	5	4	5
	a. Unit-V b. Unit-I/II/III/IV/V				
8. a)	Explain the casting process carried out in Jewelry industry with AM patterns	7	2	5	1
b)	Differentiate between conventional tooling and rapid tooling.	7	2	3	5

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M.Tech. II Semester End Examinations

Model Question Paper

Course Title: Design for Manufacturing and Assembly   **Course Code: MT216PE**

Time   : 3 hours   Max. Marks   : 70

Answer any FIVE Questions

(Each question carries 14 marks)

Q. No.	Stem of the question	M	L	CO	PO
	Unit-I				
1. a)	List out design for X-topics in Engineering design	7	4	1	1
b)	What are the phases in design process	7	1	1	1
	Unit-II				
2. a)	What is dimensional tolerance and explain it	7	1	2	4
b)	List any five general design guide lines for machining	7	4	2	4
	Unit-III				
3. a)	What are types of welding processes	7	1	3	2
b)	Recall any two general design guidelines for welding	7	1	3	3
	Unit-IV				
4. a)	What is choice of assemble method and explain it	7	1	4	1
b)	Explain Geneva plate mechanism with neat sketch	7	2	4	3
	Unit-V				
5. a)	What is assembly efficiency and explain it	7	1	5	1
b)	List out benefits of DFA	7	4	5	2
	a. Unit-I b. Unit-II				
6. a)	Explain design philosophy	7	2	1	2
b)	Explain use of solidification simulation in casting process	7	5	2	2
	a. Unit-III b. Unit-IV				
7. a)	Recall design principles for blanking operation	7	1	3	4
b)	Demonstrate Rack and pinion indexing mechanism with neat sketch	7	2	4	2
	a. Unit-V b. Unit-I/II/III/IV/V				
8. a)	Develop insertion time for assembly process	7	3	5	5
b)	List out various casting methods	7	4	2	3

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