

## Model Question Paper-1 with effect from 2022-23 (CBCS Scheme)

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### Fifth Semester B.E. Degree Examination CIM AND AUTOMATION

TIME: 03 Hours

Max. Marks: 100

Note: 01. Answer any **FIVE** full questions, choosing at least **ONE** question from each **MODULE**.

	<b>Module -1</b>	<b>*Bloom's Taxonomy Level</b>	<b>COs</b>	<b>Marks</b>
Q.01	a Define Cim. List out the need of cim.	L1	CO1	04
	b Explain the role of computers in design and manufacturing with a neat sketch.	L2	CO1	08
	c Discuss the stages/phases in the product development cycle and the importance of each stage/phase.	L2	CO1	08
<b>OR</b>				
Q.02	a Write a short note on the following Rate of production b. MLT c. Availability d. Utilization e. WIP f. Production capacity	L2,L3	CO1	10
	b The parts produced in a certain batch have to be processed through an average of 6 machines. There are 20 new batches launched each week. Other data as follows: i) Average operation time = 6 min ii) Average setup time = 5Hr iii) Average non operation time = 8 Hr iv) Average batch size = 25parts There are 18 work centers in the plant and the plant operates for an average of 70 productions hours per week with 95% availability of machine and scrap rate is negligible. Determine the following a) Manufacturing lead time ii) Plant capacity iii) Production rate iv) Plant utilization V) Work in process	L2,L3,L4	CO1	10
<b>Module-2</b>				
Q. 03	a Explain the nomenclature of a single point cutting tool with a sketch. Discuss the significance of cutting edge angle, relief angle and rake angle on the machining process.	L1,L2	CO2	10
	b Briefly explain the following (i)Tool presetting (ii) Automated tool changer (ATC)	L1,L2	CO2	10
<b>OR</b>				
Q.04	a What are the types of CNC machine centers? Explain with a neat sketch Vertical machine centre (VMC)	L1, L2	CO3	10
	b Briefly explain the components of CNC machine. Mention the advantages, disadvantages and industrial applications of CNC machines.	L1,L2	CO3	10
<b>Module-3</b>				
Q. 05	a What is AI? Why do we implement AI in robots?	L1, L2	CO3	08
	b What is human robot interaction and explain.	L2	CO3	06
	c Explain the principles of trustworthy artificial intelligence.	L2	CO3	06
<b>OR</b>				
Q. 06	a What do you understand by humanoid robots? Explain multi robot system. List out its applications.	L1.L2	CO3	10

	b	What are the basic components of a robot? List the name of the areas where the robotics can be applied?	L2,L3	CO3	10
<b>Module-4</b>					
	a	What is material handling system, List out the types of material handling equipment.	L1, L2	CO4	08
Q. 07	b	With the help of neat sketch explain the following i)Conveyor system ii) AGV system	L2,L3	CO4	12
	c	Explain the Preparation steps involved in the blanking process	L1	CO4	08
OR					
	a	Explain the concept of automated storage retrieval system (ASRS)	L1, L2	CO4	10
Q. 08	b	Explain how to interface material handling and storage system with manufacturing system.	L2	CO4	10
<b>Module-5</b>					
	a	Explain in detail steps involved in CNC part programming	L1	CO5	06
Q. 09	b	Write a description for following G codes and M codes. i. G90 ii.G98 iii. G03 iv. M05 v. M30 vi. M01	L2	CO5	06
	c	Write the part programming for turning operation given in figure a.	L2,L3	CO5	08
OR					
	a	Write the part programming for milling operation given in figure b.	L2,L3	CO5	12
Q. 10	b	Explain the coordinate systems in CNC program	L2	CO5	08

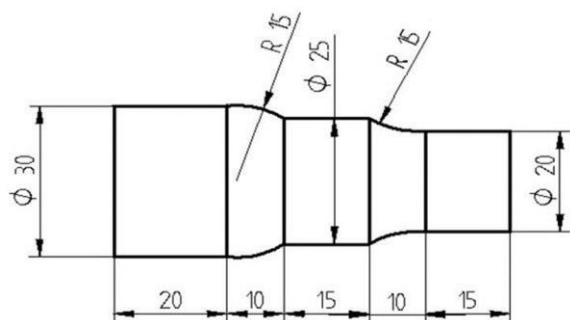


Fig. (a)

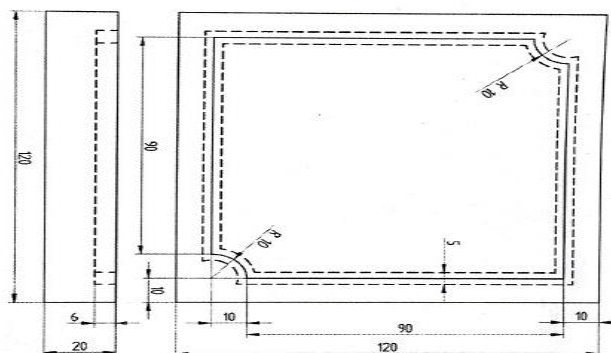


Fig. (b)

\*Bloom's Taxonomy Level: Indicate as L1, L2, L3, L4, etc. It is also desirable to indicate the COs and POs to be attained by every bit of questions.

## Model Question Paper-2 with effect from 2022-23 (CBCS Scheme)

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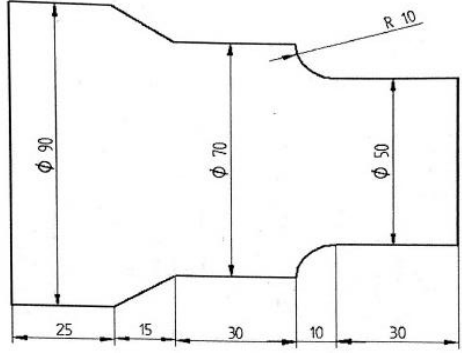
### Fifth Semester B.E. Degree Examination CIM AND AUTOMATION

TIME: 03 Hours

Max. Marks: 100

Note: 01. Answer any **FIVE** full questions, choosing at least **ONE** question from each **MODULE**.

Module -1			*Bloom's Taxonomy Level	COs	Marks
Q. 01	a	What is the role of CIM in manufacturing? Mention the application of CIM in manufacturing planning?	L1, L2	CO1	10
	b	Explain with a suitable sketch product cycle in conventional and computerized manufacturing.	L2	CO1	10
<b>OR</b>					
Q.02	a	An average 20 new orders are started each month in a factory. On an average order consists of 50 parts to be processed through 10 machines. Average operation time 15min, average setup time is 4h and average non operation time per order is 8h/machine. There are 20% in repair / mentenance. The plant operates an average of 160 production hours per month. However the plant manger complains that total of 100 over time machine hour must be authorized each month in order to keep up with the production schedule. Determine a) MLT b) Production capacity c) Plant utilization d) WIP	L2,L3	CO1	08
	b	Briefly explain the following with their significance during manufacturing process : a) Manufacturing lead time b) Operation time c) Manufacturing time d) Work in progress e) Utilization f) Availability	L1, L2	CO1	12
<b>Module-2</b>					
Q. 03	a	Explain the nomenclature of milling tool with a sketch. Discuss the significance of tool geometry.	L1,L2	CO2	10
	b	Briefly explain the following (i) Work hoding devices (ii) Automated tool changer (ATC)	L1,L2	CO2	10
<b>OR</b>					
Q.04	a	What are the types of CNC machine centers? Explain with a neat sketch Vertical machine centre (VMC)	L1, L2	CO2	10
	b	Briefly explain the components of CNC machine. Mention the advantages, disadvantages and industrial applications of CNC machines.	L1,L2	CO2	10
<b>Module-3</b>					
Q. 05	a	What is AI? Why do we implement AI in robots?	L1, L2	CO3	08
	b	What is human robot interaction and explain.	L2	CO3	06
	c	Explain the artificial intelligent search algorithm for robot planning and manipulation	L2	CO3	06
<b>OR</b>					

Q. 06	a	What is robotic vision? Elaborate on robot motion and its types. Mention the steps of robot vision.	L1,L2	CO3	10
	b	What are the various types of sensors used in robots and explain.	L2,L3	CO3	10
<b>Module-4</b>					
Q. 07	a	What are the principles of material handling system? Explain the significance of Material Handling in Industry.	L1, L2	CO4	08
	b	Explain the following terms in material handling system with a suitable sketch 1) Conveyor system 2) AGV system	L2.L3	CO4	12
OR					
Q. 08	a	What are the components of AS/RS system? Explain the Benefits of Automated Storage and Retrieval System.	L1, L2	CO4	10
	b	Explain the following a) Cororsel storage system b) Interface locking and storage system	L2,L3	CO4	10
<b>Module-5</b>					
Q. 09	a	Explain in detail steps involved in CNC part programming	L1	CO5	08
	b	Briefly explain about the code used in cnc part programming. Write a description for following G codes and M codes. i. G00 ii.G97 iii. G04 iv. M00 v. M09 vi. M02	L2	CO5	12
OR					
Q. 10	a	Write the part programming for turning operation given in figure. 	L2,L3	CO5	10
	b	Write a short note on the following a) Absolute coordinate system b) Incremental coordinate system	L1, L2	CO5	10

\*Bloom's Taxonomy Level: Indicate as L1, L2, L3, L4, etc. It is also desirable to indicate the COs and POs to be attained by every bit of questions.