

BALLARI INSTITUTE OF TECHNOLOGY & MANAGEMENT

(Autonomous Institute under Visvesvaraya Technological University, Belagavi)

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Course Code

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Seventh Semester B.E. Degree Examinations, February 2025

COMPUTER INTEGRATED MANUFACTURING

Duration: 3 hrs

Max. Marks: 100

Note: 1. Answer any FIVE full questions, choosing ONE full question from each module.
2. Missing data, if any, may be suitably assumed

<u>Q. No</u>	<u>Question</u>	<u>Marks</u>	<u>(RBTL:CO:PI)</u>																																	
<u>Module-1</u>																																				
1.	a. Define Automation. Explain the different types of Automation made in Industry.	10	(1 :1 : 1.2.1)																																	
	b. Explain the following terms : (i) Production rate (ii) Production capacity (iii) Utilization and Availability (iv) Manufacturing Lead Time (v) Work-In- Process (OR)	10	(2 :2: 1.3.1)																																	
2.	a. Explain with a neat sketch loop type automated flow line.	10	(1 :1: 1.3.1)																																	
	b. State the various important parameters considered in analysis of automated flow lines with storage buffer.	10	(2 :1: 1.3.1)																																	
<u>Module-2</u>																																				
3.	a. Differentiate wire frame, solid and surface modelling techniques.	10	(2 :2: 1.4.1)																																	
	b. Explain the different functions of a graphics package and list the benefits of CAD package. (OR)	10	(2 :2: 1.4.1)																																	
4.	a. Sketch and explain retrieval type of CAPP.	10	(2 :2: 1.3.1)																																	
	b. Write a short note on capacity planning and bill of materials.	10	(2 :2: 1.3.1)																																	
<u>Module-3</u>																																				
5.	a. What do you mean by AS/RS system? Discuss. State its advantages and applications.	10	(2 :3: 1.3.1)																																	
	b. Briefly explain automatic parts identification system and data capture. (OR)	10	(2 :3: 1.3.1)																																	
6.	a. A manual assembly line has to accomplish 10 work elements to complete the assembly. The elemental times and precedence requirements are given below. The production rate is 60 units per hour, efficiency of the line is 95 %, and repositioning time is 3 seconds. Use KW method to balance the line, compute balance delay and efficiency.	12	(2 :3: 1.4.1)																																	
<table><tr><td>Element</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>10</td></tr><tr><td>Time in min</td><td>3</td><td>4</td><td>3</td><td>2</td><td>4</td><td>1</td><td>5</td><td>6</td><td>4</td><td>6</td></tr><tr><td>Preceded by</td><td>-</td><td>-</td><td>1</td><td>1,2</td><td>2</td><td>3,4</td><td>4</td><td>5</td><td>6,7</td><td>8,9</td></tr></table>				Element	1	2	3	4	5	6	7	8	9	10	Time in min	3	4	3	2	4	1	5	6	4	6	Preceded by	-	-	1	1,2	2	3,4	4	5	6,7	8,9
Element	1	2	3	4	5	6	7	8	9	10																										
Time in min	3	4	3	2	4	1	5	6	4	6																										
Preceded by	-	-	1	1,2	2	3,4	4	5	6,7	8,9																										
	b. List the objectives and factors affecting line balancing.	08	(2 :3: 1.4.1)																																	

Module-4

7. a. Differentiate CNC and conventional machine tools. State the benefits of CNC. 10 (2 :4: 1.4.1)
b. Explain the structure of manual part programming and list any 5 G Codes and M Codes used in part programming. 10 (2 :4: 1.4.1)

(OR)

8. a. With a neat sketch explain polar and Cartesian configurations of industrial robots. 12 (2 :4: 1.4.1)
b. Sketch and explain end effectors as grippers and tools. 08 (2 :4: 1.4.1)

Module-5

9. a. Explain in brief the important steps involved in additive manufacturing. 08 (2 :5: 1.4.1)
b. Sketch and explain the following processes 12 (2 :5: 1.4.1)
(i) Photo polymerization (ii) Material jetting,

(OR)

10. a. What is Industry 4.0? State its functions and benefits to the present Industry. 10 (2 :5: 1.4.1)
b. Write a note on IoT and supply chain management. 10 (2 :5: 1.4.1)

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