Total No. of Questions: 6 *Total No. of Printed Pages:3*

Enrollment No.....

Faculty of Engineering

End Sem Examination Dec 2024

RA3EL37 Computer Integrated Manufacturing

Programme: B.Tech. Branch/Specialisation: RA

Duration: 3 Hrs. **Maximum Marks: 60**

Note: All questions are compulsory. Internal choices, if any, are indicated. Answers of Q.1 (MCQs) should be written in full instead of only a, b, c or d. Assume suitable data if necessary. Notations and symbols have their usual meaning.

			Marks	BL	PO	CO	PSO
Q.1	i.	Which of the following is not a disadvantage of CAD? (a) The software has a lot of different tools for drawing (b) Users need to learn a lot before they can use CAD effectively (c) Need a powerful monitor and high-quality screen (d) CAD packages can be very expensive	**1**	1	1	1	1
	ii.	A system that automates the drafting process with interactive computer graphics is called- (a) Computer-Aided Engineering (CAE) (b) Computer-Aided Design (CAD) (c) Computer Aided Manufacturing (CAM) (d) Computer Aided Instruction (CAI)	**1**	1	1	1	1
	iii.	In CNC machining, what is the role of the CNC controller? (a) Designing parts (b) Generating G-codes (c) Operating the machine (d) Monitoring temperature	**1**	1	3	3	1
	iv.	Which programming language is commonly used to create CNC programs? (a) Java (b) C++ (c) G-code (d) Python	**1**	1	3	3	1

P.T.O.

v.	Cellular manufacturing is also known as_____. (a) Manufacturing Technology (b) Production Technology (c) Group Technology (d) None of these	**1**	2	5	4	1
vi.	What is the Full form of AGV? (a) Automated Guard Vehicle (b) Automated Guided Vehicle (c) Automated Grinding Vehicle (d) Automated Ground Vehicle	**1**	1	5	4	1
vii.	What is the primary function of a robot's actuator? (a) To sense the environment (b) To perform tasks (c) To process information (d) To store energy	**1**	2	1	5	1
viii.	Which sensors are commonly used in robotic systems for distance measurement? (a) Gyroscope (b) Ultrasonic sensor (c) Temperature sensor (d) Light sensor	**1**	2	1	5	1
ix.	CAPP stands for____. (a) Computer Aided Progress Panning (b) Computer Added Process Planning (c) Computer-Aided Process Planning (d) Computer Aided Product Planning	**1**	1	3	5	1
x.	Which system uses computers at lower-level strategies? (a) Variant CAPP (b) Generative CAPP (c) Hybrid CAPP (d) All of these	**1**	1	3	5	1

Q.2	i.	Define industrial automation with suitable example.	**2**	1	1	1	1
	ii.	Differentiate between manual and automated production system. (any six differences)	**3**	3	3	1	1
	iii.	Describe the classification of automation by giving appropriate examples.	**5**	2	1	1	1
OR	iv.	Describe CIM with an example and state the benefits of CIM.	**5**	2	1	1	1

Q.3	i.	What is the NC system? Explain with an example.	**2**	1	1	3	1
	ii.	What is computer aided part programming? Explain the principle of automated part programming and state its advantages.	**8**	1	1	3	1
OR	iii.	Describe CNC system and DNC system by giving appropriate examples and block diagrams.	**8**	2	3	3	1
Q.4	i.	Explain GT part families.	**3**	2	5	4	2
	ii.	What are the classification systems for GT? Explain OPITZ and MICLASS systems in detail.	**7**	2	5	4	2
OR	iii.	What is FMS? Describe the components of FMS with suitable examples.	**7**	2	5	4	2
Q.5	i.	Describe the need of automation in industries. Back up your answer with the suitable examples.	**4**	2	3	1	1
	ii.	Describe any three renowned technologies of smart manufacturing with related examples from industries.	**6**	2	3	4	2
OR	iii.	Describe the applications of robotics in industries by giving suitable examples.	**6**	2	5	4	1
Q.6		Attempt any two:					
	i.	Describe computer aided process planning	**5**	2	5	5	1
	ii.	Write applications of CAD/CAM for automated planning.	**5**	3	5	5	1
	iii.	Write short note on real time data acquisition in manufacturing.	**5**	4	5	5	1

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Marking Scheme
RA3EL37 (T) Computer Integrated Manufacturing (T)

Q.1	i)	a) The software has a lot of different tools for drawing	**1**
	ii)	b) Computer-Aided Design (CAD)	**1**
	iii)	c) Operating the machine	**1**
	iv)	c) G-code	**1**
	v)	(c) Group Technology	**1**
	vi)	(b) Automated Guided Vehicle	**1**
	vii)	B) To perform tasks	**1**
	viii)	B) Ultrasonic sensor	**1**
	ix)	c) Computer Aided Process Planning	**1**
	x)	(a) Variant CAPP	**1**

Q.2	i.	Define industrial automation with a suitable example. Definition with example……..2 marks	**2**
	ii.	Differentiate between manual and automated production systems. (any six differences) Six differences (Each difference…….0.5 marks)	**3**
	iii.	Describe the classification of automation by giving appropriate examples. Classification with examples……5 marks	**5**
OR	iv.	Describe CIM with an example and list the benefits of CIM. Description…….3 marks Benefits……2 marks	**5**

Q.3	i.	What is the NC system? Explain with an example. Brief explanation with an example……2 marks	**2**
	ii.	What is computer-aided part programming? Explain the principle of automated part programming and state its advantages. Brief explanation……2 marks Principles of part programming……..4 marks Advantages……..2 marks	**8**
OR	iii.	Describe the CNC system and DNC system by giving appropriate examples and block diagrams. Each description with a block diagram and examples…….4 marks	**8**

Q.4	i.	Explain GT part families. A brief explanation of GT…….3 marks	**3**
	ii.	What are the classification systems for GT? Explain OPITZ and MICLASS systems in detail. Classification…….1 mark Explanation of OPITZ……3 marks Explanation of MICLASS……..3 marks	**7**
OR	iii.	What is FMS? Describe the components of FMS with suitable examples. A brief explanation of FMS……1 mark Description of different components……..6 marks	**7**

Q.5	i.	Describe the need for automation in industries. Back up your answer with suitable examples. Description with examples……4 marks	**4**
	ii.	Describe any three renowned technologies of smart manufacturing with related examples from industries. Description of each technology with example……2 marks	**6**
OR	iii.	Describe the applications of robotics in industries by giving suitable examples. Application of robotics in various industries……6 marks	**6**

Q.6		Attempt any two:	
	i.	Computer-aided process planning. Description of CAPP……..5 marks	**5**
	ii.	Application of CAD/CAM for automated planning Applications in automated planning……5 marks	**5**
	iii.	Real-time data acquisition in manufacturing Description ……..5 marks	**5**

[2]

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