

Total No. of Questions: 6

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Enrollment No.....



Faculty of Engineering
End Sem (Even) Examination May-2019
ME3CO14 CAD/CAM/CIM

Programme: B.Tech.

Branch/Specialisation: ME

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.

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|-----|------|--|---|
| Q.1 | i. | CAD/CAM is the inter relationship between | 1 |
| | | (a) Marketing and design | |
| | | (b) Manufacturing and marketing | |
| | | (c) Engineering and marketing | |
| | | (d) Engineering and manufacturing | |
| | ii. | Automation means | 1 |
| | | (a) Increased productivity | |
| | | (b) Workers controlling machines | |
| | | (c) Assisting and replacing humans by machines | |
| | | (d) All of these | |
| | iii. | The benefits of CAD are | 1 |
| | | (a) Improved design accuracy | |
| | | (b) Shorter lead times | |
| | | (c) Minimum transcription errors | |
| | | (d) All of these | |
| | iv. | Item, which best describes a CAM technology is | 1 |
| | | (a) Numerical control (b) Documentation | |
| | | (c) Drafting (d) Geometric modelling | |
| | v. | What are the components of typical NC system? | 1 |
| | | (a) Tape input (b) Controller | |
| | | (c) Machine tool (d) All of these | |
| | vi. | The benefits of numerical control on machines are | 1 |
| | | (a) Reduced fixturing (b) Reduced non-productive time | |
| | | (c) Improved quality control (d) All of these | |

P.T.O.

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vii.	A flexible manufacturing system may be (a) An automated assembly line (b) Expensive to alter (c) Very difficult to change for new products (d) All of these	1
viii.	Group technology brings together and organizes (a) Automation and tool production (b) Common parts, problems and tasks (c) Parts and simulation analysis (d) Documentation and analysis	1
ix.	Which one is NOT related to rapid prototyping definition? (a) Layer by layer (b) Production line (c) Physical model (d) From 3D CAD data	1
x.	Which one of the process is NOT using laser? (a) LOM (b) SLA (c) FDM (d) SLS	1
Q.2	i. What are the different types of production system? Show the positions of these systems on volume-variety axes.	4
	ii. What is a CIM wheel? Explain its different segments in relation to CIM's scope.	6
OR	iii. What are the different types of plant layout used in a manufacturing organisation?	6
Q.3	i. Explain the following terms: CAD, CATD, CAQ and CAE.	4
	ii. List out and explain the general design rules for manufacturability.	6
OR	iii. What is Concurrent Engineering? List its advantages.	6
Q.4	i. Explain the principle of NC machine.	4
	ii. What are the basic components of NC? Explain.	6
OR	iii. Differentiate NC, CNC and DNC.	6
Q.5	i. Define FMS and CAPP.	4
	ii. Explain the OPITZ parts classification and coding system with example.	6

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OR	iii.	Describe the Production Flow Analysis (PFA) process of group technology.	6
Q.6	i.	What are the benefits of Rapid Prototyping?	4
	ii.	Explain the working principle and advantages of SLA process with a neat diagram.	6
OR	iii.	Explain the working principle and advantages of FDM process with a neat diagram.	6

Marking Scheme
ME3CO14 CAD/CAM/CIM

Q.1	i.	CAD/CAM is the inter relationship between (d) Engineering and manufacturing		1	OR	iii.	Concurrent Engineering Its advantages (any three)	3 marks 3 marks	6
	ii.	Automation means (d) All of these		1					
	iii.	The benefits of CAD are (d) All of these		1					
	iv.	Item, which best describes a CAM technology is (a) Numerical control		1					
	v.	What are the components of typical NC system? (d) All of these		1					
	vi.	The benefits of numerical control on machines are (d) All of these		1					
	vii.	A flexible manufacturing system may be (b) Expensive to alter		1					
	viii.	Group technology brings together and organizes (b) Common parts, problems and tasks		1					
	ix.	Which one is NOT related to rapid prototyping definition? (b) Production line		1					
	x.	Which one of the process is NOT using laser? (c) FDM		1					
Q.2	i.	Production system types	2 marks	4	OR				
		Volume-variety graph	2 marks						
	ii.	CIM wheel	2 marks	6					
OR		Explanation of different segments	4 marks						
	iii.	Types of plant layout		6					
		Product layout	2 marks						
		Process layout	2 marks						
		Fixed layout	2 marks						
Q.3	i.	1 mark for each CAD, CATD, CAQ and CAE. (1 mark * 4)		4					
	ii.	Design rules for manufacturability.	3 marks	6					
		Explanation	3 marks						
Q.4	i.	Principle of NC machine.		4	OR				
	ii.	Basic components of NC Explanation	2 marks 4 marks	6					
	iii.	Differentiate NC, CNC and DNC. 1.5 marks for each	(1.5 mark * 4)	6					
Q.5	i.	Define FMS and CAPP	2 marks for each	4					
	ii.	OPITZ parts classification explanation OPITZ Chart	3 marks 2 marks	6					
		Example	1 mark						
	iii.	Production Flow Analysis (PFA) explanation		6					
Q.6			3 marks						
		PFA Chart	1 mark						
		Steps for analysis	2 marks						
	i.	Benefits of Rapid Prototyping 1 mark for each	(1 mark * 4)	4					
OR	ii.	Working principle of SLA process Any two advantages of SLA process Diagram	3 marks 2 marks 1 mark	6					
	iii.	Working principle of FDM process Any two advantages of FDM process Diagram.	3 marks 2 marks 1 mark	6					
