

Enrollment No.....



Faculty of Engineering  
End Sem Examination May-2024  
AU3CO25 / ME3CO25 / ME3CO45

Manufacturing Processes -II

Programme: B.Tech.

Branch/Specialisation: AU/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. Assume suitable data if necessary. Notations and symbols have their usual meaning.

- Q.1 i. Ceramic tools are fixed to the tool body by \_\_\_\_\_. **1**  
 (a) Soldering (b) Brazing  
 (c) Welding (d) Clamping
- ii. If a tool signature is given by 18-8-12-10-6-8-1.25 then the value of nose radius is- **1**  
 (a) 18 (b) 10 (c) 6 (d) 1.25
- iii. In shaper, the job is kept \_\_\_\_\_. **1**  
 (a) Stationary (b) Rotating  
 (c) Reciprocating (d) None of these
- iv. The lathe centers are provided with standard taper known as \_\_\_\_\_. **1**  
 (a) Morse taper (b) Seller's taper  
 (c) Capman taper (d) Brown & sharp taper
- v. The height of each tooth of a broach is- **1**  
 (a) Same throughout  
 (b) In progressively decreasing order  
 (c) In progressively increasing order  
 (d) First decrease then increase
- vi. Operation of finishing previously drilled hole is- **1**  
 (a) Turning (b) Reaming  
 (c) Boring (d) Drilling
- vii. The grinding operation is a \_\_\_\_\_. **1**  
 (a) Shaping operation  
 (b) Forming operation  
 (c) Surface finishing operation  
 (d) Dressing operation

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- viii. Which of the following is correct range for grain number of grinding wheel for coarse grains? **1**  
 (a) 220-600 (b) 80-180 (c) 30-60 (d) 10-24
- ix. Non-Traditional machining can also be called as \_\_\_\_\_. **1**  
 (a) Contact machining (b) Non-contact machining  
 (c) Partial contact machining (d) Half contact machining
- x. In mechanical machining, material is removed by \_\_\_\_\_. **1**  
 (a) Erosion (b) Corrosion  
 (c) Abrasion (d) Vaporization
- Q.2 i. How many types of chips are formed in metal cutting? What factors are responsible for formation of these different types of chips? **3**  
 ii. Draw a Merchant's circle diagram and derive expressions to show relationships among the different forces acting on the cutting tool and different parameter involved in metal cutting. **7**
- OR iii. In an orthogonal turning operation on a lathe the following data were obtained: cutting forces = 120 kg, feed force = 30 kg, Back rake angle = 15°, feed rate = 0.2 mm/rev, chip thickness = 0.3 mm, cutting speed = 100 m/min, Workpiece diameter = 120 mm, depth of cut = 0.4 mm, Calculate chip thickness ratio, shear angle, coefficient of friction, friction angle, shear stress, shear strain, strain energy and chip flow velocity. **7**
- Q.3 i. What is the difference between Capstan and Turret lathe? **3**  
 ii. Explain quick returns mechanism with diagram. **7**
- OR iii. Explain various operation performed on Lathe machine. **7**
- Q.4 i. Explain the working principle and major advantages of broaching. **3**  
 ii. What is milling process? Differentiate up-milling and down-milling. **7**
- OR iii. Explain universal drilling machine with neat diagram. Also write various operation performed over it. **7**
- Q.5 i. Explain various types of bond material which holds the abrasive grains of the grinding wheels. **4**  
 ii. Explain marking system (wheel signature) of the grinding wheel. **6**
- OR iii. What is centreless grinding? Also explain honing. **6**

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- Q.6 i. What is the difference between traditional and non-traditional machining? **3**  
 ii. Explain working of electric discharge machining with construction and diagram. Give its advantages and applications. **7**
- OR iii. Explain working of abrasive jet machining with construction and diagram. Give its advantages and applications. **7**

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## Marking Scheme

### AU3CO25-ME3CO25 Manufacturing Processes -II

Q.1	i)	(b) brazing		<b>1</b>
	ii)	(d) 1.25		<b>1</b>
	iii)	a) stationary		<b>1</b>
	iv)	(a)Morse taper		<b>1</b>
	v)	c) In progressively increasing order		<b>1</b>
	vi)	b) reaming		<b>1</b>
	vii)	c) surface finishing operation		<b>1</b>
	viii)	d) 10-24		<b>1</b>
	ix)	b) Non-contact machining		<b>1</b>
	x)	a) Erosion		<b>1</b>
Q.2	i.	types of chips:	1.5 Marks	<b>3</b>
		factors:	1.5 Marks	
	ii.	Diagram	3.5 Marks	
OR		Explanation	3.5 Marks	<b>7</b>
	iii.	chip thickness ratio, shear angle, coefficient of friction, friction angle, shear stress, shear strain, strain energy and chip flow velocity:	1 Marks each	
Q.3	i.	3 difference-	3 Marks	<b>3</b>
	ii.	Mechanism:	3.5 Marks	
OR		Diagram: 3.5 Marks		<b>7</b>
	iii.	7 operation :	1 marks each	
Q.4	i.	Working principle:	1.5 Marks	<b>3</b>
		Advantages:	1.5 Marks	
	ii.	milling process:	3 Marks	<b>7</b>
OR		Difference:	4 Marks	
	iii.	Diagram:	2 Marks	
		Explanation:	2 Marks	<b>7</b>
		Operation: 3 Marks		
Q.5	i.	Types:	4 Marks	<b>4</b>

OR	ii.	wheel signature:	6 Marks	<b>6</b>
	iii.	Centreless grinding:	3 Marks	
		Honing:	3 Marks	
Q.6	i.	3 difference-	3 Marks	<b>3</b>
	ii.	Construction, working and diagram:	3 Marks	
		Advantages:	2 Marks	<b>7</b>
OR		Application:	2 Marks	
	iii.	Construction, working and diagram:	3 Marks	
		Advantages:	2 Marks	<b>7</b>
		Application:	2 Marks	

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