

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

USN 

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### Fourth Semester B.E. Degree Examination Non-Traditional Machining

TIME: 03 Hours

Max. Marks: 100

**Note: 1. Answer any FIVE full questions, choosing at least ONE full question from each module.**

**2. M; Marks, L; Bloom's level, C; Course outcomes.**

Module-1			M	L	C
Q.1	a.	Define Non-traditional Processes, Give complete classification of NTM.	10	L2	CO1
	b.	Justify the need for NTM. Mention the specific applications of NTM process.	10	L2	CO1
<b>OR</b>					
Q.2	a.	Distinguish between Conventional vs Non-Traditional Machining.	10	L2	CO1
	b.	Elucidate the Physical parameters and Process capability of the Non-Traditional machining process.	10	L3	CO1
<b>Module-2</b>					
Q.3	a.	Describe the effect of following process parameters on Ultrasonic machining i) Amplitude and frequency of vibrations of the tool. ii) Slurry concentration iii) Abrasive size iv) Effect of applied static load	10	L3	CO2
	b.	Elucidate the working principle of Abrasive Jet machining (AJM).	10	L2	CO2
<b>OR</b>					
Q.4	a.	Describe the tool feed mechanism used in Ultrasonic Machining	10	L2	CO2
	b.	Elucidate the process characteristics of Abrasive Jet machining (AJM).	10	L2	CO2
<b>Module-3</b>					
Q.5	a.	Elucidate the working of Electro-chemical Grinding (ECG) with neat sketch.	10	L3	CO 3
	b.	Characterize the following elements of Chemical Machining Etchants (ii) Maskants	10	L2	CO 3
<b>OR</b>					
Q.6	a.	Illustrate the Chemistry of ECM Process.	10	L3	CO 3
	b.	Describe Chemical Milling process with a neat schematic representation.	10	L2	CO 3

<b>Module-4</b>					
<b>Q.7</b>	<b>a.</b>	<b>Describe</b> non thermal generation of Plasma in PAM.	<b>10</b>	<b>L2</b>	<b>CO4</b>
	<b>b.</b>	<b>Characterize</b> Travelling Wire EDM process with schematic representation.	<b>10</b>	<b>L3</b>	<b>CO4</b>
<b>OR</b>					
<b>Q.8</b>	<b>a.</b>	<b>Characterize</b> the safety precautions that need to be considered in plasma arc machining.	<b>10</b>	<b>L2</b>	<b>CO4</b>
	<b>b.</b>	<b>Distinguish</b> between Transferred and Non-Transferred Arc Plasm torch mode of operation.	<b>10</b>	<b>L2</b>	<b>CO4</b>
<b>Module-5</b>					
<b>Q.9</b>	<b>a</b>	<b>Characterize</b> the ND: YAG Laser used in the Laser Beam Machining.	<b>10</b>	<b>L2</b>	<b>CO5</b>
	<b>b</b>	<b>Elucidate</b> process parameters of Electron Beam Machining	<b>10</b>	<b>L3</b>	<b>CO5</b>
<b>Q.10</b>	<b>a</b>	<b>Describe</b> the equipment used for Electron Beam Machining with schematic representation.	<b>10</b>	<b>L2</b>	<b>CO5</b>
	<b>b</b>	<b>Illustrate</b> the working principle of Laser Beam Machining with a neat sketch.	<b>10</b>	<b>L2</b>	<b>CO5</b>

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

USN

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### Fourth Semester B.E. Degree Examination Non-Traditional Machining

TIME:03Hours

Max.Marks:100

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

		Module-1	*Bloom's Taxonomy Level	Marks	COs
<b>Q.01</b>	<b>a</b>	What is non-traditional machining? Classify the modern machining processes based on the nature of energy employed.	L2	10M	CO1
	<b>b</b>	Justify the need of unconventional manufacturing process in today's industries.	L2	6M	CO1
	<b>c</b>	List the applications of NTM.	L1	4M	CO1
<b>OR</b>					
<b>Q.02</b>	<b>a</b>	List and explain the various factors to be considered for selection of machining processes in NTM.	L2	8M	CO1
	<b>b</b>	Differentiate between conventional (traditional) and non-traditional machining processes with examples.	L2	6M	CO1
	<b>c</b>	List any three advantages and limitations of NTM.	L1	6M	CO1
<b>Module-2</b>					
<b>Q.03</b>	<b>a</b>	Discuss the influence of the following parameters on USM process: (i) Amplitude and frequency of vibration. (ii) Grain size. (iii) Slurry (iv) Viscosity (v) Static load	L2	10M	CO2
	<b>b</b>	Draw the schematic diagram of abrasive jet machining and explain its working principle. Also mention the advantages of AJM.	L2	10M	CO2
<b>OR</b>					
<b>Q.04</b>	<b>a</b>	What is Ultrasonic machining? With neat sketch, explain the main elements of ultrasonic machining process.	L2	10M	CO2
	<b>b</b>	Explain the effect of following variables that influence material removal rate in abrasive jet machining: (i) Stand-off distance (ii) Types of abrasives (iii) Carrier gas (iv) Velocity of abrasive jet (v) Size of abrasive grain	L2	10M	CO2
<b>Module-3</b>					
<b>Q.05</b>	<b>a</b>	Describe various process parameters affecting ECM.	L2	10M	CO3

	<b>b</b>	Explain with flow chart the chemical blanking process. Mention its applications.	<b>L2</b>	<b>10M</b>	<b>CO3</b>
<b>OR</b>					
<b>Q.06</b>	<b>a</b>	Explain with diagram, working of electro chemical grinding (ECG).	<b>L2</b>	<b>8M</b>	<b>CO3</b>
	<b>b</b>	Explain in brief the following in chemical machining process: i) Maskants ii) Etchants	<b>L2</b>	<b>8M</b>	<b>CO3</b>
	<b>c</b>	Differentiate between 'chemical milling' and chemical blanking'.	<b>L2</b>	<b>4M</b>	<b>CO3</b>
<b>Module-4</b>					
<b>Q.07</b>	<b>a</b>	Explain with a neat sketch, the traveling wire EDM.	<b>L2</b>	<b>10M</b>	<b>CO4</b>
	<b>b</b>	Explain with a neat sketch, the non-thermal generation of plasma and mechanism of metal removal in PAM.	<b>L2</b>	<b>10M</b>	<b>CO4</b>
<b>OR</b>					
<b>Q.08</b>	<b>a</b>	With a neat sketch, explain the plasma arc machining (PAM) process and also mention its applications.	<b>L2</b>	<b>10M</b>	<b>CO4</b>
	<b>b</b>	What are the commonly used dielectric fluids in EDM process? What properties should they possess?	<b>L2</b>	<b>6M</b>	<b>CO4</b>
	<b>c</b>	List the advantages and disadvantages of Electrical Discharge Machining (EDM).	<b>L1</b>	<b>4M</b>	<b>CO4</b>
<b>Module-5</b>					
<b>Q.09</b>	<b>a</b>	Sketch and explain electron beam machining process.	<b>L2</b>	<b>8M</b>	<b>CO5</b>
	<b>b</b>	With a neat sketch, explain the mechanism of metal removal in LBM process.	<b>L2</b>	<b>6M</b>	<b>CO5</b>
	<b>c</b>	Describe the apparatus used to generate laser	<b>L2</b>	<b>6M</b>	<b>CO5</b>
<b>OR</b>					
<b>Q.10</b>	<b>a</b>	Draw a neat sketch of a typical setup for Laser Beam Machining (LBM) and explain briefly.	<b>L2</b>	<b>8M</b>	<b>CO5</b>
	<b>b</b>	Explain the principle of Electron beam machining.	<b>L2</b>	<b>6M</b>	<b>CO5</b>
	<b>c</b>	State the advantages, disadvantages and applications of EBM.	<b>L1</b>	<b>6M</b>	<b>CO5</b>