Total No. of Questions: 6 *Total No. of Printed Pages:2*

Enrollment No.....

Faculty of Engineering
End Sem Examination Dec-2023
OE00047 Advance Machining Processes

Programme: B.Tech. Branch/Specialisation: All

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. Material removal rate in USM increases with- **1**
(a) Decrease in amplitude (b) Increase in frequency
(c) Decrease in frequency (d) None of these

ii. In Abrasive jet machining, what may be the size of the abrasive grains used? **1**
(a) 10 – 40 µm (b) 50 – 100 µm
(c) 100 – 150 µm (d) 200 – 300 µm

iii. By using Chemical machining, which of the following can be produced? **1**
(a) Pockets (b) Contours (c) Slots (d) All of these

iv. How does the current pass between the two electrodes in ECM? **1**
(a) Direct contact of electrodes
(b) Electrolytic solution
(c) Extra wire connected to tool and Workpiece
(d) None of these

v. In Electrical discharge machining, the temperature developed is of the order of- **1**
(a) 2,000°C (b) 6,000°C (c) 10,000°C (d) 14,000°C

vi. Material removal rate in EDM increases with- **1**
(a) Decrease in current
(b) Increase in current
(c) Increase in melting point of workpiece
(d) None of these

vii. Range of voltage used in Ultrasonic-Assisted ECM (USECM) is- **1**
(a) 0.1 - 0.5 V (b) 3 – 15 V (c) 100-300 V (d) 1000-2000 V

viii. How much amount of burr is produced in the process of ECD? **1**
(a) 10 % (b) 20 % (c) 50 % (d) No burr produced

P.T.O.

ix. In which of the following, an electrochemical oxidation on the work surface takes place- **1**
(a) Electrochemical grinding
(b) Electrical discharge machining
(c) Electrochemical machining
(d) Ultrasonic machining

x. The grinding wheel used in the ECG process is of which charge given below? **1**
(a) Positive charge (b) Negative charge
(c) Neutral charge (d) None of these

Q.2 i. Write down the use of Transducer in USM. **2**
ii. What are the basic limitations of conventional machining process? **3**
iii. Explain machine setup, working principle and application of Water jet machining processes. **5**
OR iv. Explain the effect of various parameters in AJM with diagrams. **5**

Q.3 i. Write down the function of electrolyte in the ECM process. **3**
ii. Explain machine setup, working principle and application of ECM. **7**
OR iii. Explain various steps involved in chemical machining process and give specific advantages, disadvantages and application of chemical machining. **7**

Q.4 i. Explain working principle of EBM with diagram. **3**
ii. Explain machine setup, working principle and application of Plasma arc machining. **7**
OR iii. Explain lasing operation and mechanism of material removal in LBM with diagram. **7**

Q.5 i. What is hybrid machining process? Give its basic classification. **4**
ii. Explain in detail Laser assisted ECM (ECML) with advantages. **6**
OR iii. Explain machine setup, working principle and application of Abrasive electro-discharge machining (AEDM). **6**

Q.6 Attempt any two:
i. Explain Electro-discharge grinding with diagram. **5**
ii. Explain machine setup, working principle and application of Magnetic Abrasive Finishing (MAF) process. **5**
iii. Explain Electrochemical de-burring (ECD) with diagram. **5**

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Marking Scheme

Advance Machining Processes (T) - OE00047 (T)

Q.1	i)	Increase in frequency	**1**
	ii)	10 – 40 µm	**1**
	iii)	All of the mentioned	**1**
	iv)	Electrolytic solution	**1**
	v)	10,000°C	**1**
	vi)	Increase in Current	**1**
	vii)	0.1 - 0.5 V	**1**
	viii)	No burr produced	**1**
	ix)	Electrochemical grinding	**1**
	x)	Negative charge	**1**

Q.2	i.	Transducer in USM	(1 Mark*2)
	ii.	Limitation	(1 Mark*3)
	iii.	Machine set up with Diagram	2 Marks
		working principle	2 Marks
		Application	1 Mark
OR	iv.	Diagram	2 Marks
		Parameter	(1 Mark*3)

Q.3	i.	Function	(1 Mark*3)
	ii.	Machine set up with Diagram	2 Marks
		Principle	3 Marks
		Application	2 Marks
OR	iii.	2 marks for different processes, 3 marks for advantages and disadvantages, 2 marks for application	

Q.4	i.	Diagram	1 Mark
		working principle	2 Marks
	ii.	Machine set up	2 Marks
		Principle,	3 Marks
		Application	2 Marks
OR	iii.	Diagram,	1 Mark
		Operation	3 Marks
		Mechanism	3 Marks

Q.5	i.	for Process,	2 Marks
		for classification	2 Marks
	ii.	for explanation with diagram,	4 Marks
		for advantages	2 Marks
OR	iii.	for machine setup,	2 Marks
		for working principle	3 Marks
		Application	1 Mark

Q.6	i.	Diagram	1 Mark
		For explanation	4 Marks
	ii.	For machine set up,	2 marks
		For working principle	2 marks
		For application	1 mark
	iii.	for diagram	1 mark
		for explanation	4 marks

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