Code No: **R41034** **R10** **Set No. 1**

IV B.Tech I Semester Regular/Supplementary Examinations, Nov/Dec - 2015

UNCONVENTIONAL MACHINING PROCESSES

(Mechanical Engineering)

Time: 3 hours **Max. Marks: 75**

Answer any FIVE Questions
All Questions carry equal marks
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1 a) List the unconventional machining process under mechanical energy, thermal energy and chemical energy category. [8]
b) What are the main parameters to be considered while selecting a particular unconventional machining process and why? [7]

2 a) Plot and discuss the following relationship for USM
(i) Particle size Vs Material removal rate
(ii) Particle Velocity Vs Material removal rate
(iii) Frequency Vs Material removal rate [9]
b) What are the advantages and limitations of Ultrasonic machining. [6]

3 a) Write the applications of different types of abrasives used in AJM. [8]
b) Write advantages, limitations and applications of Water jet machining [7]

4 a) Explain functions of electrolyte used in ECM and name three electrolytes with their specialties. [7]
b) Explain the principle of electrochemical grinding with neat sketch. [8]

5 a) Explain the mechanism of EDM showing the circuit and movements of ions. [10]
b) Discuss the advantages of electro discharge grinding. [5]

6 a) What type of laser is best for welding metals? Why is it best? [7]
b) What are the process parameters that affect on the machining process in EBM? [8]

7 a) Discuss the process parameters that influence on the quality of the cut in PAM. [10]
b) Write applications of plasma arc machining. [5]

8 Explain the principle of abrasive flow finishing with neat sketch. State their Advantages, limitations and Applications. [15]

Code No: **R41034** **R10** **Set No. 2**

IV B.Tech I Semester Regular/Supplementary Examinations, Nov/Dec - 2015

UN CONVENTIONAL MACHINING PROCESSES

(Mechanical Engineering)

Time: 3 hours **Max. Marks: 75**

Answer any FIVE Questions
All Questions carry equal marks
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1	a)	Distinguish between conventional and unconventional manufacturing process.	[8]
	b)	What are the main parameters to be considered while selecting a particular unconventional machining process?	[7]
2	a)	Explain with neat sketch different tool feeding mechanisms in ultra sonic machining.	[10]
	b)	Write limitations of ultrasonic machining.	[5]
3	a)	Explain how would select the best possible abrasive and nozzle materials to be used in abrasive jet machining.	[8]
	b)	Discuss the applications of Abrasive water jet machining.	[7]
4	a)	Discuss the applications of Chemical machining.	[5]
	b)	Describe various process parameters affecting ECM.	[10]
5	a)	List the commonly used dielectric fluids in EDM process. What properties should they posses?	[7]
	b)	Explain with sketch the traveling wire electro discharge machining process.	[8]
6	a)	Write a note on different types of lasers used in laser beam machining process.	[9]
	b)	What are the advantages of electron beam welding over arc welding?	[6]
7	a)	Write a note on process performance in plasma arc cutting process.	[7]
	b)	Sketch and explain non-transferred plasma arc system.	[8]
8		Mention advantages and limitations of electro stream drilling and how this process is suitable for machining brittle materials.	[15]

Code No: **R41034** **R10** **Set No. 3**

IV B.Tech I Semester Regular/Supplementary Examinations, Nov/Dec - 2015

UN CONVENTIONAL MACHINING PROCESSES

(Mechanical Engineering)

Time: 3 hours **Max. Marks: 75**

Answer any FIVE Questions
All Questions carry equal marks

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1 Give a classification scheme for the unconventional machining processes based on mechanism of material removal. Mention the energy transfer media in each case with neat sketch. [15]

2 Explain USM process with the required figure of the set up and a magnified view at a tool tip/work piece. [15]

3 a) State clearly the process capability of AJM. [6]

b) Explain with block diagram of water jet machining. [9]

4 a) With a neat schematic diagram, explain the electro chemical honing process. [8]

b) Discuss the advantages and applications of electrochemical grinding. [7]

5 a) Briefly explain the rotary pulse generator in EDM process with neat sketch. [7]

b) Explain with help neat sketches any two types of flushing methods in EDM process. [8]

6 a) State advantages, disadvantages and applications of Electron beam machining. [7]

b) Explain working of Laser Beam Machining with neat sketch. [8]

7 a) Discuss the plasma arc welding and plasma arc spraying. [7]

b) What are the different modes of operation of plasma torches? Explain. [8]

8 Explain the principle of Magnetic abrasive finishing with neat sketch. State their Advantages, limitations and Applications. [15]

Code No: **R41034** **R10** **Set No. 4**

IV B.Tech I Semester Regular/Supplementary Examinations, Nov/Dec - 2015

UN CONVENTIONAL MACHINING PROCESSES

(Mechanical Engineering)

Time: 3 hours **Max. Marks: 75**

Answer any FIVE Questions
All Questions carry equal marks
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1		Make comparison between traditional and nontraditional machining process in terms of cost, application, scope, machine time and limitations.	[15]
2	a)	Discuss the process capabilities of Ultrasonic machine.	[6]
	b)	Explain different types of concentrators used in ultrasonic machining.	[9]
3		Write five important variables of AJM process. Draw a sketch showing the effect of these variables on MRR	[15]
4	a)	Discuss about economic aspects of ECM.	[6]
	b)	Explain briefly, the chemical machining process with help of neat flow chart.	[10]
5		For an electrical discharge machining process discuss the following: (i) Dielectric system (ii) Electrodes (iii) Power supply	[15]
6	a)	Briefly discuss about the most important elements of electron beam machining system.	[10]
	b)	What are the major applications of Laser beam machining?	[5]
7	a)	Discuss the applications of plasma in manufacturing.	[10]
	b)	Explain with neat sketch transferred plasma arc system.	[5]
8	a)	Explain in detail about applications of shaped tube electrolytic machining.	[7]
	b)	Explain working of Electro Stream Drilling with neat sketch.	[8]