Scheme of Valuation/Answer Key

(Scheme of evaluation (marks in brackets) and answers of problems/key)

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

SIXTH SEMESTER B.TECH DEGREE EXAMINATION, APRIL2018

Course Code: ME306

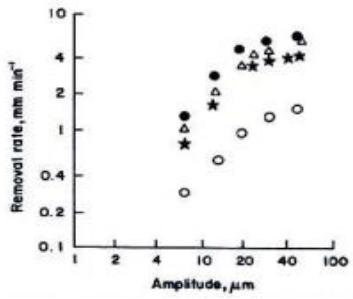
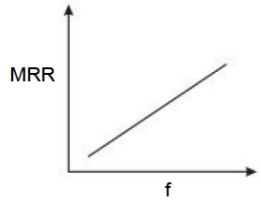
Course Name: ADVANCED MANUFACTURING TECHNOLOGY

Max. Marks: 100		Duration: 3 Hours

PART A

		Answer any three full questions, each carries 10 marks.	Marks
1	a)	Three Methods –(2 * 3= 6) 1.water atomization 2.Gas atomization 3. Centrifugal atomization	(6)
	b)	Any Four Advantages (1* 4 = 4)	(4)
2	a)	Fix the floating Zero at Left bottom corner of the work (You may fix any where) Redraw the figure and mark (0,0,0) O001 N001G21 G17 G90 G04; N002 G00 G28 ; N003 M06 T001 ; N004 G54 X0 Y0 Z0 ; N005 G29 X0 Y0 Z5 ; N006 M03 S1000 M08 ; N007 GO1 F50 Z -10 ; N008 G01 X35 ; N009 G01 X50 Y15 ; N009 G01 Y40 ; N010 G03 X40 Y50 I 10 J0 F25 ; **In Fanuc control that is G03 X40 Y50 I -10 J0 F25(otherwiseG03 X40 Y50R10 F25) is to be used**. N011 G01 X10 F50 ; N012 G02 X0 Y40 I 10 J0 F25 ; **Sequence no. N12G02 X0 Y40 I 10 J0 F25 that also to beG02 X0 Y40 I -10 J0 F25** **(Otherwise G03 X0 Y40R10 F25)** N013 G01 X0Y0 F50 ; N014 G00 Z5;	(10)

		N015 M05 M09 ; N016 G00 G28 ; N017 M02; ****** Some G codes may vary using the programming approach. This may consider during valuation**.	
3	a)	Any 5 G codes and its meaning (1 * 5 = 5)	(5)
	b)	Any Two method (2.5 * 2 = 5) Eg. L1 = LINE/P3, P4 L2 = LINE/P5, PARLEL, L3	(5)
4	a)	Figure (1.5 * 1 =1.5) Three process- pre heating . sintering and cooling (1.5 * 3 = 4.5)	(6)
	b)	Any Four points (1* 4 = 4)	(4)
PART B			
Answer any three full questions, each carries 10 marks.			
5	a)	Figure (2* 1 = 2) Explanation (3 *1 = 3)	(5)
	b)	Any five parameters (1* 5 = 5) ● Orifice (Nozzle) – Sapphires – 0.1 to 0.3 mm ● Focusing Tube – WC – 0.8 to 2.4 mm ● Pressure – 2500 to 4000 bar ● Abrasive – garnet and olivine - #125 to #60 ● Abrasive flow - 0.1 to 1.0 Kg/min ● Stand off distance – 1 to 2 mm ● Machine Impact Angle – 60 o to 90 0 ● Traverse Speed – 100 mm/min to 5 m/min ● Depth of Cut – 1 mm to 250 mm	(5)
6	a)	Any 4 characteristics (1.5* 4 =6) 1.The process can be used to machine any work material if it is electrically conductive 2.Material removal depends on mainly thermal properties of the work material rather than its strength, hardness etc	(6)

		3. In EDM there is a physical tool and geometry of the tool is the positive impression of the hole or geometric feature machined 4. The tool has to be electrically conductive as well. The tool wear once again depends on the thermal properties of the tool material 5. Though the local temperature rise is rather high, still due to very small pulse on time, there is not enough time for the heat to diffuse and thus almost no increase in bulk temperature takes place. Thus the heat affected zone is limited to 2 – 4 μm of the spark crater	
	b)	Any four (1 * 4 = 4) ☐ Aerospace, Medical, Electronics and Semiconductor applications ☐ Tool & Die making industries. ☐ For cutting the hard Extrusion Dies ☐ In making Fixtures, Gauges & Cams ☐ Cutting of Gears, Strippers, Punches and Dies ☐ Manufacturing hard Electrodes. ☐ Manufacturing micro-tooling for Micro-EDM, Micro-USM and such other micromachining applications.	(4)
7	a)	Figure (2* 1 = 2) Explanation (3 *1 = 3)	(5)
	b)	  (3 * 2 = 6)	(5)
8	a)	Figure (1*1 = 1) Explanation (3*1 = 3)	(4)
	b)	Figure (2*1 = 2) Explanation (4*1 = 4)	(6)
		PART C	
		Answer any four full questions, each carries 10 marks.	
9	a)	Two technique (3 * 2 = 6) 1. Stand off 2. Contact	(6)

	b)	Figure (1*1 = 1) Explanation (3*1 = 3)	(4)
10	a)	Explanation (4*1 = 4) Figure (3*2 =6)	(10)
11	a)	Figure (1*1 = 1) Explanation (3*1 = 3) Application (1*2 = 2)	(6)
	b)	Figure (1*1 = 1) Explanation (3*1 = 3)	(4)
12	a)	Figure (2*1 = 2) Explanation (4 *1 = 4)	(6)
	b)	Any Four points (1* 4 = 4)	(4)
13	a)	Figure (3*1 = 3) Explanation (4 *1 = 4)	(7)
	b)	Any Six process (0.5 * 6 = 3)	(3)
14	a)	Figure (2*1 = 2) Explanation (3*1 = 3)	(5)
	b)	Figure (2*1 = 2) Explanation (3*1 = 3)	(5)
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