Seat No.: _____ *Enrolment No._____*

GUJARAT TECHNOLOGICAL UNIVERSITY

M. E. - SEMESTER – I • EXAMINATION – WINTER • 2013

Subject code: 715003N **Date: 03-01-2014**

Subject Name: Advanced Manufacturing Processes

Time: 10.30 am – 01.00 pm **Total Marks: 70**

Instructions:

1. **Attempt all questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full mark.**

Q.1	**(a)**	Explain current development in Non conventional processes.	**07**
	(b)	How the developments in the area partly responsible for evolution of advanced machining techniques?	**07**
Q.2	**(a)**	Sketch and explain different feasible dielectric flushing techniques applicable in case of EDM.	**07**
	(b)	With the help of a neat diagram explain the working principle of AJM and its applications.	**07**
		OR	
	(b)	Write and explain important process parameters of AJM, Draw of sketch showing effects of these variables on MRR.	**07**
Q.3	**(a)**	Prove that discharging voltage for maximum power delivery to the discharge circuit in EDM is about 72% of the supply voltage.	**07**
	(b)	Find the approximate time required to machine a hole to 10 mm and 1 mm deep is to be made in TW plate (Fracture hardness=6900 N/mm^2). The mean abrasive grain size is 0.015 mm diameter. The feed force is equal to 3.5 N. The amplitude of tool oscillation is 25 µm and the frequency is equal to 25 KHz. The tool material used is copper having fracture hardness equal to 1.5 X 10^3 N/mm^2 .The slurry contains one part abrasive to one part of water. Take the values of different constants as K_1=0.3, K_2=1.8mm^2, K_3=0.6, and abrasive density= 3.8 gm/cm^3. (Ignore Volume removed by throwing V_{th})	**07**
		OR	
Q.3	**(a)**	With the neat sketch explain Electron beam welding and its applications.	**07**
	(b)	Derive the equation for interelectrode gap (y_e) for equilibrium condition in ECM.	**07**
Q.4	**(a)**	With neat sketch, briefly explain working principle of Ultrasonic Welding process and its applications.	**07**
	(b)	Enlist methods of stretch forming processes. Explain applicability, advantages and limitations of stretch forming processes.	**07**
		OR	
Q.4	**(a)**	Explain the process of Magnetic pulse forming. What are its characteristics and advantages?	**07**
	(b)	Enumerate the process of Elecrtohydraulic forming process and its advantages.	**07**
Q.5	**(a)**	Enumerate and explain sequence of operations is involved in Continues casting.	**07**
	(b)	Explain squeeze casting processes and stated its advantages.	**07**
		OR	
Q.5	**(a)**	Explain ceramic shell casting process and its advantages.	**07**
	(b)	Write merit and demerit of advanced casting process over conventional casting processes.	**07**

****