Seat No.: _____ **Enrolment No._____**

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–VI (NEW) - EXAMINATION – SUMMER 2016

Subject Code:2161504 **Date:13/05/2016**

Subject Name: Metal Cutting & Advanced manufacturing processes

Time: 10:30 AM to 01:00 PM **Total Marks: 70**

Instructions:

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

Q.1	**(a)**	Name and discuss various elements of metal cutting.	**07**
	(b)	State the reasons responsible for the development of advanced machining processes.	**07**
Q.2	**(a)**	Explain different types of chips formed in metal cutting with conditions.	**07**
	(b)	Explain the construction and use of Merchant's circle diagram.	**07**
		OR	
	(b)	Explain Electro discharge machining (EDM) process in detail.	**07**
Q.3	**(a)**	Differentiate between orthogonal cutting and oblique cutting.	**07**
	(b)	Discuss chip thickness ratio and its importance.	**07**
		OR	
Q.3	**(a)**	Write note on advanced cutting tool materials.	**07**
	(b)	State the functions of a cutting fluid. What are the essential properties of a cutting fluid ?	**07**
Q.4	**(a)**	What is machinability? State the factors which come in to play while evaluating machinability of any metal.	**07**
	(b)	Discuss principles of location for jig and fixture design.	**07**
		OR	
Q.4	**(a)**	Define tool life. Discuss the effects of various tool angles on tool wear and tool life.	**07**
	(b)	Discuss the elements of Computer Numerical Control system and also state the advantages of CNC system.	**07**
Q.5	**(a)**	Discuss working principle, process characteristics, application, and limitations of Electro-chemical machining (ECM) process.	**07**
	(b)	Explain Ultrasonic machining (USM) process in detail.	**07**
		OR	
Q.5	**(a)**	Describe Electron beam machining (EBM) process in detail.	**07**
	(b)	Write note on Abrasive jet machining process.	**07**

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