Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–VI • EXAMINATION – SUMMER • 2014

Subject Code: 161504 Date: 28-05-2014

Subject Name: Metal Cutting and 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 marks.**

Q.1	**(a)**	Explain with the help of neat sketch the complete geometry of a single point cutting tool.	**07**
	(b)	State the reasons responsible for the development of advanced machining processes.	**07**
Q.2	**(a)**	Discuss the elements of Computer Numerical Control system and also state the advantages of CNC system.	**07**
	(b)	Explain Electro discharge machining (EDM) process in detail.	**07**
		OR	
	(b)	Discuss principles of location for jig and fixture design.	**07**
Q.3	**(a)**	What is chip reduction coefficient ? What are the effects of cutting variables on the chip reduction coefficient ?	**07**
	(b)	State the functions of a cutting fluid. What are the essential properties of a cutting fluid ?	**07**
		OR	
Q.3	**(a)**	Derive an expression for the optimum cutting speed at which the cost will be minimum.	**07**
	(b)	Write note on advanced cutting tool materials.	**07**
Q.4	**(a)**	Define tool life. State the factors which affect the tool life.	**07**
	(b)	What is tool wear? Explain causes and types of tool wear.	**07**
		OR	
Q.4	**(a)**	Describe with sketch how to calculate the resultant force acting on a single point cutting tool in turning.	**07**
	(b)	Describe Direct numerical control (DNC) system.	**07**
Q.5	**(a)**	Describe Laser beam machining (LBM) process. State its advantages and disadvantages.	**07**
	(b)	Write note on Abrasive jet machining process.	**07**
		OR	
Q.5	**(a)**	Describe electron beam machining process in detail.	**07**
	(b)	State the functions of electrolyte in ECM process.	**07**

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