Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE – SEMESTER – V (NEW) EXAMINATION – WINTER 2015

Subject Code: 2152507 **Date:05/12/ 2015**

Subject Name: Tool Engineering

Time:10:30am to 1:00pm **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 mechanics of machining. Explain the heat & friction generation in machining. Classify chips and explain chip formation process.	**07**
	(b)	What is tool engineering? How it is useful in modern industrial scenario? Explain it with suitable examples.	**07**
Q.2	**(a)**	What is the usefulness of Merchant circle diagram for force and velocity relationship in machining? How it is prepared? Explains with neat sketch.	**07**
	(b)	Define tool geometry and its elements. Explain each element of it with its effect on machining. What happens if the value is changed of each element?	**07**
		OR	
	(b)	Define tool life. How tool life of a tool can be improved? What are the causes of wear? What precautions can be taken to reduce wear?	**07**
Q.3	**(a)**	Define and explain various cutting parameters and its effects on machining. What happens if a parameter value id changed?	**07**
	(b)	What is the function of cutting fluid in machining? Explain types of cutting fluid with their characteristics, working and applications.	**07**
		OR	
Q.3	**(a)**	Define a single point cutting tool. Explain various methods of manufacturing single point cutting tool. Which method is better for a specific operation?	**07**
	(b)	Explain standard multipoint tools and tool holders. Explain their requirement in modern tool engineering. How they are designed for automates?	**07**
Q.4	**(a)**	Which are the materials used for manufacturing tools? Explain contents of various tool materials with effect and application of each element.	**07**
	(b)	Explain center of pressure in press tools. How a compound die is designed? What calculation is carried out for designing press die?	**07**
		OR	
Q.4	**(a)**	What are the requirements of jigs? Design a suitable jig for a drilling operation in a steel square plate at four corners and in centre?	**07**
	(b)	Explain principles work holders. Explain working of common work holders in tool engineering.	**07**
Q.5	**(a)**	Which types of locators and clamps used in latest jigs and fixtures? Explain each in detail with sketch.	**07**
	(b)	Explain various multipoint cutting tools with their features, working and applications.	**07**
		OR	
Q.5	**(a)**	Differentiate simple, compound and progressive dies in press working. How progressive die is designed?	**07**
	(b)	Explain how casting and forging dies are designed. Differentiate both designs according to applications.	**07**