Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE- Vth SEMESTER–EXAMINATION – MAY/JUNE - 2012

Subject code: 152502 **Date: 02/06/2012**

Subject Name: Tool design

Time: 02:30 pm – 05:00 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)**	Define Tool design and discuss the various steps in Tool design.	**07**
	(b)	Explain how the chips are formed in machining and how are they classified?	**07**
Q.2	**(a)**	What are the various location devices? Explain these with the aid of suitable sketches.	**07**
	(b)	What is meant by optimum clearance? What are the effects of inadequate clearance and excessive clearance upon die metal?	**07**
		OR	
	(b)	Sketch and explain: Blanking die, compound die, combination die and progressive die.	**07**
Q.3	**(a)**	Discuss various types of Tool wear.	**07**
	(b)	Describe the various types of fixtures used for the Grinding Machine.	**07**
		OR	
Q.3	**(a)**	Sketch a single point cutting tool and show on it the various tool elements and tool angles. Give the function of each tool element.	**07**
	(b)	List and explain the types of drill bushes.	**07**
Q.4	**(a)**	What are the form tools? Discuss the design features of form tools.	**07**
	(b)	"A machine tool is an inverse of heat engine", Justify the statement.	**07**
		OR	
Q.4	**(a)**	Sketch a twist drill and write briefly on it's following elements: (i) Lip angle (ii) helix angle (iii) chisel angle and (iv) point angle	**07**
	(b)	List and explain the requirements of Cutting tool material.	**07**
Q.5	**(a)**	Define "Interchangeability" and "Selective assembly" and discuss the importance of each.	**07**
	(b)	Design and draw 'GO' and 'NO GO' ends of a plug gauge to measure a hole of size 28.000 $\pm$ 0.014 mm adopting (i) Unilateral System and (ii) Bilateral System	**07**
		OR	
Q.5	**(a)**	Explain 'Merchant force circle'. State the assumptions made in the development of such diagram.	**07**
	(b)	What is Scrap Strip Layout? Explain by taking suitable job; also calculate percentage utilization for the same. Assume your own dimensions.	**07**

****