Seat No.: _____ *Enrolment No._____*

GUJARAT TECHNOLOGICAL UNIVERSITY

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

Subject code: 712802N **Date: 26-12-2013**

Subject Name: Machining Science

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 mechanism of plastic deformation by slip.	**07**
	b.	Discuss dynamometer requirement for turning.	**07**
Q.2	**a.**	Explain tool signature of single point tool as per ASA system.	**07**
	b.	Why classical laws of friction don't obey in metal cutting?	**07**
		OR	
	b.	Describe Mohr's circle diagram to measure shear angle.	**07**
Q.3	**a.**	Discuss various parameters affecting tool life. State types of chips and various methods to avoid BUE condition.	**07**
	b.	Describe restriction imposed in metal cutting to apply optimum conditions.	**07**
		OR	
Q.3	**a.**	Describe practical method to find tool life.	**07**
	b.	Explain specification of a grinding wheel.	**07**
Q.4	**a.**	Derive an equation to find chip length in grinding.	**07**
	b.	Discuss the role of chip tool interface temperature in metal cutting.	**07**
		OR	
Q.4	**a.**	Explain the terminologies related to surface roughness with sketch.	**07**
	b.	State the functions of cutting fluid? Justify the effect of high speed on performance of cutting fluid in respect of power consumption.	**07**
Q.5	**a.**	How to measure rake angles in different planes?	**07**
	b.	Explain the assumptions made in Merchant's force analysis.	**07**
		OR	
Q.5	**a.**	Explain geometry of milling cutters with sketch.	**07**
	b.	What is Hi-E region? Explain the term with graphical representation.	**07**

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