Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

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

Subject code: 712802N **Date: 04-06-2013**

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) What is machinability? Explain factors affecting machinibility. **[07]**

(b) Explain 1). Hysteresis effect, **[07]**

2). Bauchinger effect with neat sketch.

Q-2 (a) Explain the geometry of twist drill with neat sketch. **[07]**

(b) Derive & expression for shear angle using Lee & shafferôs relationship. **[07]**

OR

Q-2 (a) Explain conversion from ASA to ORS. **[07]**

(b) Explain the measurement of shear angle based ob slip line filed method. **[07]**

Q-3 (a) Explain chip formation mechanism & enlist different types of chips explain in brief. **[07]**

(b) Discuss concepts of rake angle measured in different planes for oblique cutting using turning operation. **[07]**

OR

Q-3 (a) What are the methods for measuring cutting forces & explain any one. **[07]**

(b) Explain the restrictions imposed on use of economic cutting conditions. **[07]**

Q-4 (a) Derive an expression of flow due to conduction to know heat generation in metal cutting. **[07]**

(b) What is tool wear? Discuss basic three causes of tool wear. **[07]**

OR

Q-4 (a) Derive equation of optimum cost based on maximization of production. **[07]**

(b) Explain experimental method of determining average chip tool interface temperature. **[07]**

Q-5 (a) What is the mechanics of grinding process? Explain honing and lapping operation. **[07]**

OR

(a) Derive an expression for finding specific energy in grinding. **[07]**

(b) Explain various methods of measuring surface roughness. **[07]**

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