

GUJARAT TECHNOLOGICAL UNIVERSITY
M. E. - SEMESTER – I • EXAMINATION – WINTER • 2014

Subject code: 2712802**Date: 12-01-2015****Subject Name: Machining Science****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) What is tool life? Explain the effect of various parameters on tool life. **07**
(b) List various methods to designate the tool geometry and discuss the purpose of conversion from one system to other. Explain any one method of conversion from ASA to ORS. **07**
- Q.2** (a) What is built up edge (BUE)? List the reasons of its formation and explain its effect in metal cutting. (advantage and disadvantages) **07**
(b) List and explain various forms of tool wear in metal cutting, also state its reasons along with its corrective action. **07**
- OR**
- (b) List various methods to measure tool life and explain any one. **07**
- Q.3** (a) Derive an expression for finding specific energy in grinding. **07**
(b) List and discuss the parameters to be considered for selecting a grinding wheel specification. **07**
- OR**
- Q.3** (a) List and explain various thermal damage occurs during grinding process. **07**
(b) Compare Grinding, Honning and Lapping process and discuss its selection criteria. **07**
- Q.4** (a) Derive an expression for shear plane angle using Merchant theory. **07**
(b) Explain the role of friction in metal cutting and discuss methods to control it? **07**
- OR**
- Q.4** (a) List various methods to measure tool chip interface temperature and explain tool work thermo-couple method in detail. **07**
(b) Discuss the effect of temperature at tool chip interface for various tool-work material combinations. **07**
- Q.5** (a) List various methods to apply cutting fluids in machining processes and explain the role of cutting fluid with respect to thermal and surface finish aspect. **07**
(b) List various cutting force measurement methods and explain the working principle of lathe tool dynamometer. **07**
- OR**
- Q.5** (a) What is Surface roughness? Why it is important? Discuss various points to be considered for selection of a surface finish for a job? **07**
(b) Discuss economics of machining with respect to maximum production rate criteria. **07**
