

**GUJARAT TECHNOLOGICAL UNIVERSITY**  
**BE - SEMESTER-V EXAMINATION – WINTER 2015**

**Subject Code: 152502****Date:17/12/2015****Subject Name: Tool Design****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) Classify various manufacturing processes. How machining is better than others? **07**  
(b) Explain mechanism of machining. How chip is formed? Explain various types of chips and their causes. **07**
- Q.2** (a) Explain Merchant circle diagram for force and velocity relationship in Machining. **07**  
(b) What is tool geometry? Explain each element of it with its effect on machining. **07**
- OR**
- (b) Explain tool wear and tool life. How life of a tool can be improved? **07**
- Q.3** (a) Explain reason, sources and effect of heat generation in machining. **07**  
(b) Explain types of cutting fluid with their characteristics and applications. **07**
- OR**
- Q.3** (a) What is a tool signature? Explain various methods of making a single point tool **07**  
(b) Explain functions of various multi point cutting tools for machining. **07**
- Q.4** (a) Explain various types of cutting tool materials. Which is the hardest material? **07**  
(b) What is the effect of clearance in press tool? Explain various types of dies. **07**
- OR**
- Q.4** (a) Explain the necessity of jigs & fixtures in industries. **07**  
(b) Explain principles of location and clamping with useful devices applications. **07**
- Q.5** (a) Describe functions of common work holding devices. **07**  
(b) What is tolerance? Explain various types of fits in use. **07**
- OR**
- Q.5** (a) Explain interchangeability and selective assembly with suitable examples. **07**  
(b) Explain design, manufacturing and selection of limit gauges. **07**

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