

**GUJARAT TECHNOLOGICAL UNIVERSITY**  
**PDDC - SEMESTER-VII EXAMINATION – SUMMER 2016**

**Subject Code: X71902****Date: 12/05/2016****Subject Name: Production Technology****Time: 02:30 PM to 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) Sketch and explain tool geometry for single point cutting tool and also explain tool signature. **07**  
(b) List and explain cutting tool material properties. **07**
- Q.2** (a) In an orthogonal cutting operation, the following data have been observed: uncut chip thickness – 0.127mm; width of cut – 6.35mm; cutting speed – 2 m/s; rake angle – 10°; cutting force – 567 N; thrust force – 227 N; chip thickness – 0.228mm. Determine shear angle, friction angle, shear stress and shear strain in chip. **07**  
(b) Explain various forces involved in machining operation by Merchant's circle diagram. **07**  
**OR**  
(b) With neat sketch explain different types of chips. **07**
- Q.3** (a) With neat sketch explain 3-2-1 location principle. **07**  
(b) List the commonly used clamps for clamping purpose and with sketch explain any three of them. **07**  
**OR**
- Q.3** (a) List the different types of drilling jigs and with sketch explain any three of them. **07**  
(b) List the commonly used fixtures and explain any three of them. **07**
- Q.4** (a) Explain gear manufacturing by gear planning method with its advantages and limitations. **07**  
(b) List the thread manufacturing methods and explain with neat sketch thread rolling. **07**  
**OR**
- Q.4** (a) Explain gear manufacturing by gear hobbing process with its advantages and limitations. **07**  
(b) List the stepless mechanical drives and explain any two of them. **07**
- Q.5** (a) Explain the working principle of electrical discharge machining and state its applications. **07**  
(b) Differentiate clearly between capstan and turret lathe. **07**  
**OR**
- Q.5** (a) Explain the working principle of laser beam machining and state its applications. **07**  
(b) With neat sketch explain the working of automatic turret indexing mechanism. **07**

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