

Seat No.: \_\_\_\_\_

Enrolment No. \_\_\_\_\_

# GUJARAT TECHNOLOGICAL UNIVERSITY

B.E. Sem-V<sup>th</sup> Examination December 2010

Subject code: 152502

Subject Name: Tool Design

Date: 15 /12 /2010

Time: 03.00 pm - 05.30 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) Define Tool Design. Explain the procedure of Tool Design. 07  
(b) Draw the Merchant Circle diagram and state its assumptions. 07

- Q.2 (a) Explain Orthogonal and Oblique cutting system with neat sketch. 07  
(b) Derive the equation of shear angle. 07

OR

- (b) What are the impacts of different cutting parameters on tool life? 07

- Q.3 (a) Write sources of heat generation in machining and its effects. 07  
(b) For the following tool signature draw the different views of a single point cutting tool. 07  
 $10^\circ, 5^\circ, 7^\circ, 6^\circ, -5^\circ, 5^\circ, 1\text{mm}$

OR

- Q.3 (a) Explain geometry of different multipoint cutting tools. 07  
(b) Explain the types of cutting tool materials, their selection and applications. 07

- Q.4 (a) Describe the properties of coolants. Explain different types of coolants with their applications. 07  
(b) Explain the Press working terminology with neat sketch. 07

OR

- Q.4 (a) Classify the press working dies. Explain any one of them. 07  
(b) Explain the principle of location. Or “Six point location” Or “3-2-1” principle. 07

- Q.5 (a) Explain the various types of clamping devices with neat sketch. 07  
(b) Write terminology for limits and fits with neat sketch. 07

OR

- Q.5 (a) Classify the plain gauges with sketch. 07  
(b) Find the ‘GO’ and ‘Not GO’ gauge dimensions of a plug gauge using Bilateral and Unilateral Systems and including wear allowance for gauging  $75 \pm 0.05\text{mm}$  diameter holes. 07

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