

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

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

# GUJARAT TECHNOLOGICAL UNIVERSITY

M. E. - SEMESTER – II • EXAMINATION – WINTER • 2014

Subject code: 1725007

Date: 05-12-2014

Subject Name: Tool Design

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) Define Cutting Tool & Enlist their desirable properties in Details. **07**  
(b) Explain in details H.S.S, CBN, Carbide Tools, Ceramics Tool & Reinforced Tool materials. **07**
- Q.2** (a) Explain with neat sketch of Merchant Circle diagram of Chip Formation. **07**  
(b) The Feed of an 16-tooth face mill is 0.025 cm per tooth at 500 r.p.m. The material cut is 250 BHN steel. Depth of Cut is 0.45 cm and the width is 12 cm. Calculate the (a) H.P at the Cutter (b) H.P at the motor if the efficiency of the machine is 50%. **07**
- OR**
- (b) Explain the Design of Single Point Cutting Tools with AS system. **07**
- Q.3** (a) How to determining the Insert Thickness for Carbide Tool? **07**  
(b) Define  $\phi$ GO $\phi$  and  $\phi$ NO GO $\phi$  Gauge. Find the  $\phi$ GO $\phi$  and  $\phi$ NO GO $\phi$  Gauge dimensions of a Plug gauge using Bilateral and Unilateral Systems and including wear allowance for gauging  $92 \pm 0.05$  mm diameter holes. **07**
- OR**
- Q.3** (a) Explain the basic requirements of work holding devices & Enlist Different types of Work holding devices used in Industries. **07**  
(b) Design the Twist Drill. **07**
- Q.4** (a) General Consideration in Design of Drill Jigs. **07**  
(b) Explain types of Drilling Jigs with neat sketch. **07**
- OR**
- Q.4** (a) What is Milling Fixture? Give their Classification. **07**  
(b) Explain Fixture Design for NC Controlled machine tools. **07**
- Q.5** (a) Explain Chip Formation in Drilling Operation & Give Proper Case Study on it. **07**  
(b) Explain modern manufacturing in Drill Jig. **07**
- OR**
- Q.5** (a) Explain Lathe Fixtures. **07**  
(b) Give the Design Procedure for Grinding operation. **07**

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