**IE-352**
**Section 1, CRN: 32997**
**Section 2, CRN: 5022**
**Second Semester 1431-32 H (Spring-2011) – 4(4,1,1)**
**MANUFACTURING PROCESSES - 2**

**Sunday, Apr 17, 2011 (13/5/1432H)**

**Exercise: Cutting Forces and Power**

| Name: | Student Number: |
|---|---|
|  | 42 |

## Relative Energies in Cutting

In an orthogonal cutting operation, $t_o = 0.13\ mm$, $V = 120\ m/min$, $\alpha = 10°$ and the $width\ of\ cut\ = 6\ mm$. It is observed that $t_c = 0.23\ mm$, $F_c = 500\ N$ and $F_t = 200\ N$. Calculate the percentage of the total energy that goes into overcoming friction at the tool–chip interface.