QUIZ NO. 1

The following questions give the dc voltages at the terminals of an active device. You are to calculate the designated dc current.

a.) Find the diode current, $I_D$, where $I_s = 100 \text{fA}$ and $V_T = 0.025 \text{V}$ (2 pts).

```
+ 0.6V  
|    | 
-----
|    |  
|  ID |
-----
ID0F02Q01P1A
```

b.) Find the drain-source current, $I_{DS}$, where $K_n' = 25 \mu\text{A}/\text{V}^2$, $V_{TN} = 1 \text{V}$ and $W/L = 10$ (2 pts).

```
2V

|  ID |
-----
ID0F02Q01P1B
```

c.) Find the collector, emitter, and base currents, $I_C$, $I_E$, and $I_B$ if $I_s = 100 \text{fA}$, $V_T = 0.025 \text{V}$ and $\beta_F = 100$ (4 pts).

```
5V

<table>
<thead>
<tr>
<th>IC</th>
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<tbody>
<tr>
<td>I_E</td>
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<td>I_B</td>
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0.7V
0V
0V

IC0F02Q01P1C
```

d.) Repeat (b.) if $V_D = 1 \text{V}$ and $V_G = 3 \text{V}$ (2 pts).