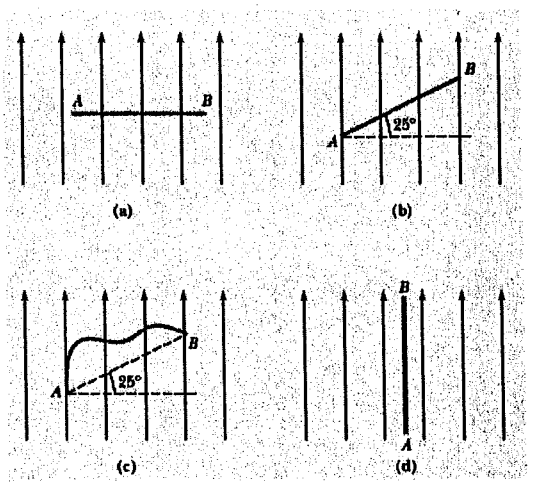
Phys 102 – Sec # 41 (Key) **Quiz # 10 (Ch. 28)**

Name: **ID #**

1- The four wires shown in the figure all carry the same current from point *A* to point *B* through the same magnetic field. In all four parts of the figure, the points *A* and *B* are 10 cm apart. Rank the wires according to the magnitude of the magnetic force exerted on them, from greatest to least.



a is greatest

(b and c) tie

d the least

2- A circular coil of 160 turns has a radius of 1.90 cm and carries a current I. If the maximum torque that the coil can experience in a uniform 35.0 mT magnetic field is 0.08 N*m, what is the value of I.

$$\vec{\tau} = \vec{\mu} \times \vec{B}$$

$$\tau = (N i A) B \sin\phi$$

τ is max when $\phi = 90°$.

$$\tau_{max} = N i A B$$

$$i = \frac{\tau_{max}}{N A B} = \frac{0.08}{(160)(\pi (1.9\times10^{-2})^2)\, 35\times10^{-3}}$$

$$i = 12.6 \text{ A}$$