4. We use Eq. 7-12 for W_g and Eq. 8-9 for U.

   (a) The displacement between the initial point and A is horizontal, so $\phi = 90^\circ$ and $W_g = 0$ (since $\cos 90^\circ = 0$).

   (b) The displacement between the initial point and B has a vertical component of $h/2$ downward (same direction as $\vec{F}_g$), so we obtain $W_g = \vec{F}_g \cdot \vec{d} = mgh/2$.

   (c) The displacement between the initial point and C has a vertical component of h downward (same direction as $\vec{F}_g$), so we obtain $W_g = \vec{F}_g \cdot \vec{d} = mgh$.

   (d) With the reference position at C, we obtain $U_B = mgh/2$.

   (e) Similarly, we find $U_A = mgh$.

   (f) All the answers are proportional to the mass of the object. If the mass is doubled, all answers are doubled.