(4) 1. Following is the structure of cholesterol, an important cell membrane component, a precursor to steroid hormones, and the culprit in atherosclerosis. Circle all the chiral carbon atoms in the cholesterol molecule. 0.5 pt each correct center, -0.5 each incorrect center.

(3) 2. Following are different Fischer projection formulas of lactic acid. Indicate the relationship between the structure pairs—whether they represent enantiomers or the same compound.

(a) Structures A and B __ enantiomer ________

(b) Structures A and C __ same compound ________

(c) Structures A and D __ same compound ________

(3) 3. Draw the structure of D-glucose in (a) the open chain Fischer projection and (b) the alpha-D-pyranose Haworth projection. Then show the correct chair conformation of the alpha-D-glucopyranose structure by filling in the H’s and OH’s on the skeleton structure.

1 pt each---0.5 pt if beta instead of alpha is shown.