2. (16 pts) Compare and contrast. Glucose and amino acid absorption through the intestinal epithelial cell have similarities and dissimilarities. Part A, what types of overall absorption mechanisms occur for the nutrients listed. Remaining parts, briefly discuss the comparisons of glucose and amino acids for each topic/category given.

A. Type of overall absorption mechanism (4 pts)
   
   Glucose – Active transport  
   Amino Acids – Active transport  
   Fructose – Facilitated transport  
   Galactose – Active transport  

B. Absorption into the cell at the brush border.
   
   (1) Similarities for glucose and amino acids. Give the name of the transporter and briefly describe the mechanism. (6 pts)
   
   *Both use SGLT*
   
   
   Na binds – changes conformation of protein – Glucose (or AA binds)  
   Enters cell down a Na conc. gradient  
   Releases glucose (or AA) inside cell  

   (2) Differences for glucose and amino acids (3 pts) –
   
   At least 6 different transporters  

C. Glucose transport across the basal membrane into the blood. (Amino acids weren’t discussed enough for a fair comparison.) (3 pts)

   Facilitated transport down a glucose conc. gradient
   GLUT 2

3. (3 pts) There are four layers of tissue in the intestinal tract. The smooth, outermost covering is called the __________________, and the innermost layer the __________________. The blood vessels, lacteals, and nerves are located in which layer? __________________.