**Study Block Quiz #2**

1. **B – Both B and C have microvilli which increase surface area, but B also possesses way more mitochondria (therefore more ATP for Endo and Exocytosis) and Golgi Apparatus (therefore more packaging and sorting) and Endoplasmic Reticulum for site of synthesis.**
2. **B – The engulfing of a whole cell or a large cell fragment is a specific type of endocytosis known as Phagocytosis.**
3. **D – W is smooth ER which produces sterol lipids and housed detox enzymes, while Y is rough ER which produces proteins (such as enzymes).**
4. **C – Z is a mitochondrion. Mitochondria run cellular respiration.**
5. **A – This is a "9 + 2" arrangement (9 doublets + 2 Central Tubules) of microtubules. It will be found in the shaft of cilia and flagella.**
6. **B – As water moves from the beaker into the bag (because solutes suck), the beaker will lose water and the concentrations of both the Glucose and the Sucrose in the beaker will become more concentrated.**
7. **A – Movement of water from a higher concentration to a lower concentration across a membrane is a specific type of diffusion called "Osmosis".**
8. **A – Those tonicity terms are used to describe the relative concentration of solutes in comparison to another environment. In this case the initial solute concentrations of Glucose and Sucrose are higher in the bag than they are outside the bag in the beaker. Therefore they are "HYPERTONIC". Over 24 hours as water moves into the bag, the solutions will end up being ISOTONIC to each other.**
9. **B – Where the mass change in potato mass is "0", the amount of water moving into the potato from the solution that was 0.35% sugar will equal the amount of water moving out of the potato. Therefore, the potato cytoplasm must have a concentration = to 0.35% sugar.**
10. **D – In X DNA is used to make mRNA during transcription, Then the mRNA moves out to the Ribosomes on the Rough ER (structure Z) where the mRNA will under translation as a polypeptide is made. Then the protein is sent to the Golgi Apparatus (Structure Y) where it is modified, sorted and re-packaged for shipping. Then it will be shipped in a vesicle to the Cell Membrane (Structure W) where the vesicle will merge with the membrane during Exocytosis.**
11. **B – Substrate. It is just a more scientific term for a biological reactant.**
12. **C – As E2 is the enzyme that converts X 🡪 Y. If E2's active site is filled with extra Z's, less X's will be able to get into the active site, so less Y will be produced.**
13. **C – Enzymes lower the amount of activation energy required to run reactions.**
14. **C – Test tube 3 must have a solution that is Hypotonic to the tissue, therefore water will move into the tissue and its mass will go up. Test tube 3 is the only test that ended up with an increase in tissue mass, going from 1.3 grams 🡪 1.8 grams.**
15. **D – The thyroid gland (structure X) will produce and release thyroxin (thyroid hormone) this hormone will cause cells to step up their metabolic rate. As cells run reactions at a faster rate, so too will the rate of cellular respiration go up.**

**Cellular Respiration : GLUCOSE + OXYGEN 🡪 CO2 + H2O**

**So the faster this reaction runs, the more Glucose will get used up.**

1. **C – Amino acids are the basic monomer of a protein. Once proteins are digested into short peptide chains by (Pepsin (gastric juice) and Trypsin (pancreatic juice)) these short peptides are then broken into individual amino acids by Peptidases (from duodenal glands). Amino acids are ready to be absorbed into the capillary bed found inside a villus.**
2. **A – W arrow is pointing at the fatter lymph vessel called a lacteal that is found inside each villus. The products of fat digestion are absorbed into these lacteals.**
3. **A – Bile is NOT AN ENZYME, but it does break fat globules into smaller fat droplets. This increases surface area so that Lipase enzymes can then break down the Triglycerides into Glycerol and Fatty Acids.**