BIEN 500- Fall 2023

Example Best answers for Homework #1

1. Between or among cells
2. Rough (granular) endoplasmic reticulum
3. 50 micrometers (few cells are located more than 50 μm away from a capillary)
4. Carbon-di-oxide (CO_2)
5. Poorly
6. Lungs
7. Oxygen concentration in the tissue (oxygen buffering function)
8. 7.5-10 nanometers thick
9. Gradient fold difference= $\frac{outside}{inside} = \frac{1.2*10^{-3}}{120*10^{-9}}$ = 10,000 fold
10. Negative feedback, because the high concentration of CO_2 initiates events that decrease the concentration towards normal, which is negative to the initiating stimulus.
11. Positive feedback, usually good or useful, bad when unwanted clots are formed. Clot on the inside surface of an atherosclerotic plaque initiates heart attack.
12. Functional protein
13. Decrease
14. One molecule thick
15. Phosphate end(outside)-hydrophilic; fatty acid portion(inside)-hydrophobic
16. Outer side
17. Carbon-di-oxide (CO_2)
18. A unit of measure that shows the concentration of a substance in a specific amount of fluid.

$$\frac{mmol}{L} = \frac{10^{-3}\, moles\ of\ solute}{liters\ of\ solution} = 10^{-3} Molarity(M)$$

19. Mixture of RNA and proteins
20. Smooth or agranular endoplasmic reticulum

21.

Peroxisomes	Lysosomes
1. Peroxisomes are formed by self-replication or by budding off from the Smooth ER. 2. They contain oxidases.	Lysosomes are formed from the Golgi apparatus. They contain hydrolases.

22. Transcription
23. Increases the surface area
24. 9 nanometers in diameter, upto 44,000 molecular weight
25. Peptide linkage
26. 5-10 µm
27. Exocytosis
28. True
29. Mitochondria
30. Phosphoric acid, a sugar called deoxyribose, four nitrogenous bases(two purines- adenine, guanine and two pyramidines- cytosine, thymine)
31. Hydrogen bonds
32. Binding of RNA polymerase to the promoter
33. Phosphate bonds/covalent linkage
34. mRNA
35. Anticodon
36. Translation
37. Decrease apoptosis in Alzheimer and increase apoptosis in cancer
38. Polyribosomes
39. Promoter
40. Repressor protein
41. Causes dormancy of the operon due to negative feedback inhibition
42. Ligase/DNA polymerase
43. Histones, electropositive
44. Neurons and most striated muscle cells
45. Decreases or inhibits cell growth due to lack of space
46. tRNA

47. Caspase
48. Increase
49. Carcinogen
50. Angiogenic factor