SBI4U/OAC **REVIEW FOR PHOTOSYNTHESIS TEST**

1. _____ Chloroplasts have 2 lipid bilayers surrounding them.
2. _____ Photosynthetic pigments are located in the thylakoid membranes.
3. _____ The stroma is the site of the light-dependent reactions.
4. _____ RuBP is located in the thylakoid.
5. _____ The sun is constantly giving off energy in the form of electromagnetic radiation.
6. _____ Visible light has less energy than gamma radiation.
7. _____ Red light has more energy than blue light.
8. _____ Red light has a longer wavelength than blue light.
9. _____ Plants utilize the visible light spectrum to perform photosynthesis.
10. _____ The x-axis of an absorption spectrum is “light absorption”.
11. _____ Chlorophyll has a long, lipid tail called a phytol.
12. _____ ATP and NADPH are produced in the dark reactions.
13. _____ A stack of thylakoids is called a granum.
14. _____ A photon is a packet of light energy.
15. _____ Pigments can absorb light due to their double bonds.
16. _____ Our eyes see leaves as green because chlorophyll strongly absorbs green wavelengths.
17. _____ Carotenoids reflect/transmit red light.
18. _____ The y-axis of the absorption spectrum is “wavelength”.
19. _____ A 450 nm light would appear blue.
20. _____ The presence of pigments that absorb wavelengths different from chlorophyll allows photosynthesis to occur at most wavelengths of visible light.
21. _____ Chlorophyll “b” has an aldehyde group where chlorophyll “a” has a methyl group.
22. _____ Chlorophyll molecules have a complicated ring structure called a porphyrin.
23. _____ Thylakoids are filled with stroma fluid.
24. _____ Carbon dioxide is a reactant in the light dependent reactions.
25. _____ The light dep. reactions are powered by ATP and NADPH.
26. _____ Glucose (ie. sugar phosphate) is a produce of the dark reactions.
27. _____ Oxygen is produced by the splitting of water in the stroma.
28. _____ Photolysis is necessary to replenish lost electrons from PII.
29. _____ A photosystem consists of an LHC and an ETS.
30. _____ The LHC consists of many chlorophyll “a” molecules and a single chlorophyll “b”.
31. _____ Carotenoids and phycobilins are considered antenna pigments.
32. _____ Light energy is really required in photosynthesis to boost protons to higher energy states.
33. _____ The reaction centre chlorophyll loses an electron to its adjacent ETS.
34. _____ The ETS is embedded in the thylakoid membrane.
35. _____ Redox reaction occur as electrons move through the ETS.
36. _____ Non-cyclic photophosphorylation does not lead to NADPH production.
37. _____ Cyclic photophosphorylation does not lead to oxygen production.
38. _____ ATP is actually produced in the stroma.
39. _____ H+ ions are concentrated in the thylakoid interior.
40. _____ The final electron acceptor in the light reactions is NADP+.
41. _____ The C3 cycle involves fixing oxygen onto RuBP.
42. _____ The C3 cycle is named for the first stable 3-carbon molecule, PGAL.
43. _____ RuBP oxygenase is the enzyme responsible for carbon fixation.
44. _____ 1 sugar phosphate is formed from 2 PGAL’s.
45. _____ The remaining PGAL’s regenerate oxaloacetate in the C3 cycle.

46. _____ Light or low CO_2 stimulates active transport of Na^+ into guard cells and water follows passively.
47. _____ More stomata are located in the bottom layer of the leaf than in the top layer.
48. _____ The palisade layer has more spaces in it than the spongy layer.
49. _____ The C4 pathway is an adaptation to cold, wet climates.
50. _____ PEP carboxylase fixes CO_2 onto RuBP.
51. _____ PEP carboxylase can fix CO_2 efficiently even in high O_2/low CO_2 environments.
52. _____ Carbon dioxide is fixed twice in C4 plants.
53. _____ Low O_2 and high CO_2 tend to increase photorespiration.
54. _____ Brilliant fall leaf colours occur as chlorophyll breaks down and other pigments show through.
55. _____ During photorespiration RuBP is broken down and lots of glucose is produced.
56. _____ Sugars in a plant travel through the xylem; water travels through the phloem.
57. _____ Carbon dioxide concentration limits the rate of the light reactions more than the rate of the dark reactions.
58. _____ There are ~10 plant physiology scientists who *may* show up on the test in some straightforward fashion.
59. _____ Sugar-phosphates may be converted into sucrose, cellulose, or glycogen.
60. _____ Plants are much neater than you once thought!