ANSWERS
1. In the thylakoid space
2. From water splitting; Proton pumps in ETC move H+ from stroma to thylakoid space
3. NADP+
4. C6H12O6 + 6 O2 → 6 CO2 + 6 H2O + energy
5. Exact opposite
6. Red and blue-violet
7. competitive
8. B-non-cyclic
9. If ETC gradient doesn’t make ATP, more sugar must be metabolized for energy needs.
 Blocking production of ATP can KILL you. Massive burning of sugar can cause patient to overheat leading to seizures/death.
10. Need more ATP than NADPH to do Calvin cycle
11. CO2
12. O2, ATP, NADPH
13. B; products have more energy than reactants
14. FALSE; enzymes change activation energy but NOT overall ∆G
15. allosteric
16. Fermentation
17. NADH drops off its electrons higher up in the ETC; FADH2 skips the first proton pump
18. Glycolysis- net 2 ATP; Krebs cycle- 2 ATP; ETC- (10 NADH X3 + 2 FADH2 X 2) =34 ATP
 (Plus net 2 from glycolysis + 2 from Krebs minus 2 ATP for transport = 36 total ATP/1 glucose)
19. Availability of oxygen
20. Alcoholic- bacteria make beer, wine; yeast makes bread
 Lactic acid-human muscle cells during exercise;
 bacteria –yogurt, sauerkraut, pickles
21. Needs to get rid of built up pyruvic acid AND regenerate NAD+ so glycolysis can continue
22. oxygen
23. As CO2 in atmosphere
24. Citric acid cycle/tricarboxylic acid (TCA) cycle
25. Increasing temp speeds up reaction up to a point. Too hot-denatures enzymes
26.

27. Disrupts hydrogen/ionic bonds/phobic/philic interactions in 2°, 3°, 4° structure
 (NOT primary)
28. Magnesium (Mg)
29. Cells couple the – Δ G reaction of hydrolysis of ATP to provide power for + Δ G reactions.
30. Entropy (disorder)
31. Mitochondria or chloroplasts
32. Substrate level phosphorylation
33. Two turns. Each makes a 3-carbon molecule (G3P)
34. Splitting of water- B (thylakoid space);
 Calvin cycle-A (stroma);
 Electron transport chain –C (thylakoid membrane);
 Phosphorylation of ADP →ATP – A (stroma);
 Reduction of NAPD+ → NADPH- A (stroma);
 build up of H+ ions – B (thylakoid space)
35. Feedback inhibition (negative feedback)
 non-competitive
 Stopping pathway at first enzyme saves cell energy and time because
 intermediate products aren’t produced
36. Plants store as starch, animals store glycogen
 Glycogen is burned next and then fat
 Beta-oxidation of fatty acids from fat; Fatty acid tails are cut into 2 carbon units
 and fed into Krebs via acetyl-CoA

37. Green plants undergo photosynthesis to remove CO2 from atmosphere, produce
 carbohydrates, and release O2 gas into atmosphere.
 Heterotrophs take in carbs and use cellular respiration break down sugars using O2 from
 atmosphere and return CO2 to atmosphere which plants can use . . . . (yeah it’s a cycle
38. REFELCTED; we see light reflected off of objects
39. Plants don’t absorb green wavelengths very well; growth would be inhibited and ability to
 photosynthesize would be decreased