

Cell Respiration and Photosynthesis Test Review

IB Syllabus Statements Below. I recommend reviewing your notes and checking the excerpts from the IB book that are online (2.8, 2.9, 8.2 and 8.3). The test will be a combination of multiple choice questions, short and long response questions, a labeled drawing, and a data-based question.

Cell Respiration:

1. Be able to define cell respiration, recognize the chemical reaction, and know where it occurs in cells.
2. Recognize ATP (adenosine triphosphate) as the currency of energy used in cells.
3. Be able to distinguish between aerobic and anaerobic respiration, and specifically be able to describe consequences of anaerobic respiration in humans and in yeast.
4. Be able to list the 3 steps of glycolysis, where it occurs, the final product, and the energy production.
5. Be able to define oxidation and reduction in terms of what happens to the electrons, oxygen, and hydrogen.
6. Be able to outline the link reaction.
7. Be able to outline the Krebs cycle, including where it occurs, net energy output, and the end product that repeats the cycle.
8. Be able to describe the electron transport chain, including where it occurs, the source of the electrons, what the falling electrons do, the role of oxygen, and what happens to the hydrogen ions.
9. Be able to describe how ATP is generated through chemiosmosis.
10. Be able to draw and label a mitochondrion (at least 7 labels) and describe how the structure supports its function (at least 3 ways).

Photosynthesis:

- 1) Be able to define photosynthesis, recognize the chemical reaction, and know where it occurs in the cell.
- 2) Understand that visible light has a range of wavelengths with violet having the shortest and red having the longest.
- 3) Be able to draw an action spectrum for photosynthesis and an absorption spectrum for photosynthetic pigments.
- 4) Be able to describe 3 limiting factors of photosynthesis and how they impact photosynthesis.
- 5) Be able to describe the light-dependent reactions, including where they take place, photosystems I and II, the sources of the electrons, the electron carriers, build up of hydrogen ions, and production of ATP and reduced NADP.
- 6) Be able to describe when cyclic photophosphorylation occurs.
- 7) Be able to describe the 3 stages of the Calvin Cycle, including where it occurs, carbon fixation, reduction and production of glycerate-3-phosphate and triose phosphate, and regeneration of ribulose biphosphate (RuBP).
- 8) Be able to describe the lollipop apparatus and how Calvin used it to determine the sequence of the Calvin Cycle.
- 9) Be able to draw and label a chloroplast (at least 7 labels) and describe how the structure supports its function (at least 3 ways).

Important Vocabulary: These are terms that we have used in this unit. Make sure that you know where they fit in with the processes.

Cellular Respiration

aerobic respiration	anaerobic respiration	oxidation	
reduction	phosphorylation	glycolysis	pyruvate
decarboxylation	acetyl CoA	Krebs cycle	matrix
oxaloacetate	NAD	FAD	electron transport chain
proton gradient	ATP synthase	chemiosmosis	oxidative phosphorylation
cristae			

Photosynthesis

thylakoids	stroma	photosystems (II and I)	photolysis
photoactivation	NADP	photophosphorylation!!!	plastoquinone
plastocyanin	ferredoxin	carbon fixation	ribulose biphosphate (RuBP)
rubisco	carboxylase	glycerate-3-phosphate	triose phosphate
chloroplast envelope	grana	starch grains	lipid droplets
cyclic photophosphorylation			