Directions: Match each term with its correct definition (Note: They are grouped into groups of 10 or less terms, look for the lines separating the groups)

\_\_\_\_1. Acetyl CoA A. a specific region on the enzyme where the substrate binds

\_\_\_\_2. Activation Energy B. describes the pathway that requires a net energy input to synthesize

complex molecules from simpler ones

\_\_\_\_3. Active Site C. the use of an electron acceptor other than oxygen to complete

metabolism using electron transport-based chemiosmosis

\_\_\_\_4. Allosteric Inhibition D. the combination of an acetyl group derived from pyruvic acid and

coenzyme A which is made from pantothenic acid (a B-group vitamin)

\_\_\_\_5. Anabolic E. a membrane-embedded protein complex that regenerates ATP from

ADP with energy from protons diffusing through it

\_\_\_\_6. Anaerobic Cellular F. the amount of initial energy necessary for reactions to occur

Respiration

\_\_\_\_7. ATP G. the concept of energy flow through living systems

\_\_\_\_8. ATP Synthase H. describes the pathway in which complex molecules are broken down

into simpler ones, yielding energy as an additional product of the reaction

\_\_\_\_9. Bioenergetics I. (also, adenosine triphosphate) the cell’s energy currency

\_\_\_\_10.Catabolic J. the mechanism for inhibiting enzyme action in which a regulatory

molecule binds to a second site (not the active site) and initiates a conformation change in the active site, preventing binding with the substrate

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\_\_\_\_11. Chemiosmosis A. a general mechanism of enzyme activity regulation in which a

molecule other than the enzyme’s substrate is able to bind the active site and prevent the substrate itself from binding, thus inhibiting the overall rate of reaction for the enzyme

\_\_\_\_12. Citric Acid Cycle B. a series of four large, multi-protein complexes embedded in the inner

mitochondrial membrane that accepts electrons from donor compounds and harvests energy from a series of chemical reactions to generate a hydrogen ion gradient across the membrane

\_\_\_\_13. Competitive C. a mechanism of enzyme activity regulation in which the product of a

Inhibition reaction or the final product of a series of sequential reactions

inhibits an enzyme for an earlier step in the reaction series

\_\_\_\_14. Electron D. the movement of hydrogen ions down their electrochemical gradient

Transport Chain across a membrane through ATP synthase to generate ATP

\_\_\_\_15. Endergonic E. a molecule that catalyzes a biochemical reaction

\_\_\_\_16. Enzyme F. the process of breaking glucose into two three-carbon molecules with

the production of ATP and NADH

\_\_\_\_17. Exergonic G. A series of enzyme-catalyzed chemical reactions of central

importance in all living cells that harvests the energy in carbon-carbon bonds of sugar molecules to generate ATP; the citric acid cycle is an aerobic metabolic pathway because it requires oxygen in later reactions to proceed

\_\_\_\_18. Feedback Inhibition H. describes a chemical reaction that results in products with less

chemical potential energy than the reactants, plus the release of free energy

\_\_\_\_19. Fermentation I. the steps that follow the partial oxidation of glucose via glycolysis to

regenerate NAD+; occurs in the absence of oxygen and uses an

organic compound as the final electron acceptor

\_\_\_\_20. Glycolysis J. describes a chemical reaction that results in products that store more

chemical potential energy than the reactants

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\_\_\_\_21. Heat Energy A. a general mechanism of enzyme activity regulation in which a

regulatory molecule binds to a site other than the active site

and prevents the active site from binding the substrate; thus, the inhibitor molecule does not compete with the substrate for the active site; allosteric inhibition is a form of noncompetitive inhibition

\_\_\_\_22. Kinetic Energy B. the energy transferred from one system to another that is not work

\_\_\_\_23. Metabolism C. the production of ATP by the transfer of electrons down the electron

transport chain to create a proton gradient that is used by ATP synthase to add phosphate groups to ADP molecules

\_\_\_\_24. Noncompetitive D. the type of energy associated with objects in motion

Inhibition

\_\_\_\_25. Oxidative E. the science of the relationships between heat, energy, and work

Phosphorylation

\_\_\_\_26. Potential Energy F. a molecule on which the enzyme acts

\_\_\_\_27. Substrate G. all the chemical reactions that take place inside cells, including those

that use energy and those that release energy

\_\_\_\_28. Thermodynamics H. the type of energy that refers to the potential to do work