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Test/Quiz

8.2 Cell Respiration

Question 1 (1 point)

Which option is correct when comparing the Krebs cycle with the Calvin cycle ?

	Krebs cycle	Calvin cycle
A	Requires CO ₂ , reduces NAD	Requires Acetyl CoA, oxidizes NADPH
B	Requires Acetyl CoA, oxidizes NADPH	Requires CO ₂ , reduces NADP
C	Requires CO ₂ , oxidizes NADH	Requires Acetyl CoA, reduces NADP
D	Requires Acetyl CoA, reduces NAD	Requires CO ₂ , oxidizes NADPH
a		A
b		B
c		C
d		D

Question 2 (1 point)

Where precisely in the cell do the reactions of the Krebs cycle take place?

a	In the stroma of the chloroplast.
b	In the thylakoid space.
c	On the surface of cristae in the mitochondria.
d	In the matrix of the mitochondria.

Question 3 (1 point)

Which of the following takes place during the link reaction of aerobic respiration?

a	Oxidation of NADH
b	Decarboxylation of pyruvate
c	Reduction of pyruvate
d	Regeneration of NAD ⁺

Question 4 (1 point)

What is required for mitochondrial ATP production?

- a Active pumping of protons into the matrix.
- b Diffusion of protons out of the matrix.
- c Accumulation of protons in the intermembrane space.
- d Accumulation of protons in the matrix.

Question 5 (1 point)

What does oxidation involve?

- a A loss of electrons.
- b A gain of electrons.
- c A loss of oxygen.
- d A gain of hydrogen.

Question 6 (1 point)

What is chemiosmosis?

- a Protons pumping into the space between the inner and outer mitochondrial membranes.
- b Phosphorylation of glucose in the matrix.
- c Protons moving down a concentration gradient into the matrix.
- d Protons pumping into the matrix through ATP synthase.

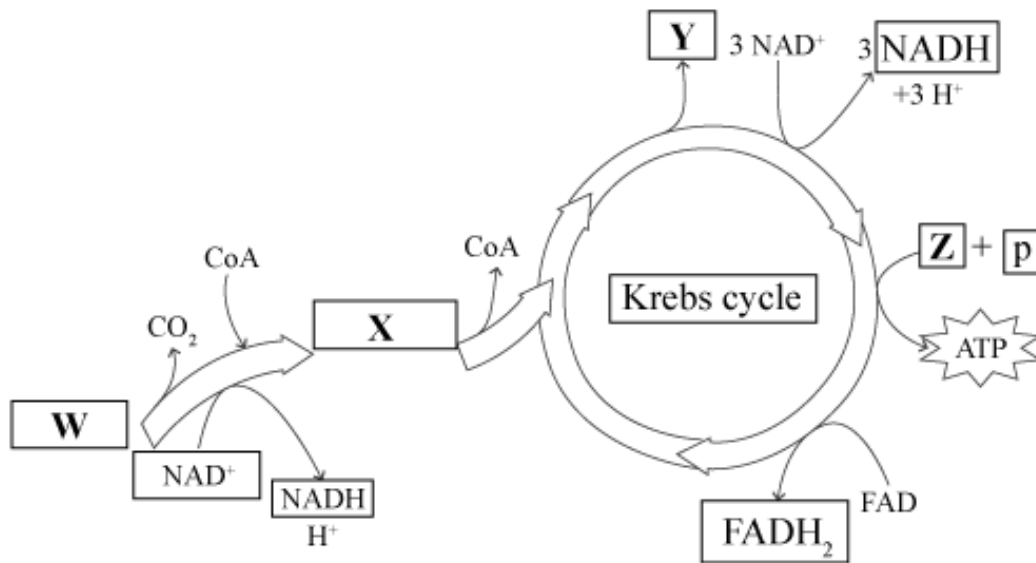
Question 7 (1 point)

In the mitochondrial electron transport chain, what is the last electron acceptor?

- a CO₂
- b H₂O
- c O₂
- d NAD⁺

Question 8 (1 point)

The diagram below shows the link reaction and the Krebs cycle. Which molecules are represented by the letters W, X, Y and Z?



	W	X	Y	Z
i.	Pyruvate	Acetyl CoA	CO_2	ADP
ii.	Acetyl CoA	CO_2	Pyruvate	ATP
iii.	Glucose	Acetyl CoA	CO_2	ADP
iv.	Glucose	CO_2	Pyruvate	ATP

- a i
- b ii
- c iii
- d iv

Question 9 (1 point)

What happens to oxygen in aerobic cell respiration?

- a It is reduced, by accepting electrons at the end of the electron transport chain.
- b It is oxidized, by accepting electrons at the end of the electron transport chain.
- c It is reduced, by accepting hydrogen at the start of the electron transport chain.
- d It is oxidized, by accepting hydrogen at the end of the electron transport chain.

Question 10 (1 point)

Which row of the table describes the first stage of cellular respiration?

	Substrate	Location	Product	Product
i.	pyruvate	mitochondria	oxygen	water
ii.	pyruvate	cytoplasm	carbon dioxide	ATP
iii.	glucose	mitochondria	pyruvate	water
iv.	glucose	cytoplasm	pyruvate	ATP
a		i		
b		ii		
c		iii		
d		iv		

Question 11 (1 point)

In any redox reaction, when there is a gain of electrons by one reacting particle, it implies that another reactant must have undergone:

- a Reduction
- b Oxidation
- c Production of water
- d Cellular respiration

Question 12 (1 point)

In liver cells, the inner mitochondrial membranes are about five times the area of the outer mitochondrial membranes. What purpose might this serve?

- a It allows for an increased rate of glycolysis.
- b It allows for an increased rate of the Krebs cycle.

- c It increases the surface for oxidative phosphorylation.
- d It increases the surface for the link reaction.

Question 13 (1 point)

During aerobic respiration, which sequence do electrons follow?

- a food → citric acid cycle → ATP → NAD⁺
- b food → NADH → electron transport chain → oxygen
- c glucose → pyruvate → ATP → oxygen
- d glucose → ATP → electron transport chain → NADH

Question 14 (1 point)

During glycolysis, when each glucose molecule is catalytically broken down to two molecules of pyruvate, most of the potential energy contained in glucose is:

- a Transferred to ADP, forming ATP
- b Transferred directly to ATP
- c Retained in the two pyruvates
- d Stored in the NADH + H⁺ produced

Question 15 (1 point)

Where does glycolysis take place in eukaryotic cells?

- a Mitochondrial matrix
- b Mitochondrial outer membrane
- c Chloroplast
- d Cytoplasm

Question 16 (1 point)

When a glucose molecule loses a hydrogen atom as a result of an oxidation–reduction reaction, the molecule becomes:

- a Hydrolysed
- b Hydrogenated
- c Reduced
- d Oxidised

Question 17 (1 point)

The molecule that is oxidised in a redox reaction:

- a Gains electrons and gains potential energy
- b Loses electrons and loses potential energy

- c Gains electrons and loses potential energy
- d Loses electrons and gains potential energy

Question 18 (1 point)

What happens during glycolysis?

- a Glucose is broken down into two pyruvate molecules.
- b Carbon dioxide is produced.
- c More ATP is consumed than is produced.
- d Lactic acid is produced.