

## Second 023

Q1- The transfer of energy from catabolic to anabolic called:

- A Energy transfer
- B Energy transport
- C Energy consumption
- D Energy coupling

Q2- Endergonic reaction ...?

- A Delta G negative
- B Spontaneous
- C Release energy
- D The products have more energy than the reactants

Q3- The last electron acceptor in ethanol fermentation is..?

- A Oxygen
- B pyruvate
- C Acetaldehyde
- D NAD+

Q4- In cellular respiration the four-carbon compound that reacts with acetyl CoA to form citrate ..!

- A malate
- B Fumarate
- C Succinate
- D oxaloacetate

Q5- Sequence of cellular respiration..?

- A. Glycolysis... oxidation of pyruvate..citric acid cycle
- B. Glycolysis..citric acid cycle.. oxidation pyruvate
- C. oxidization pyruvate..citric acid cycle.. glycolysis

Q6- Choose the false statement..

Answer: NAD+ has more chemical energy than NADH.

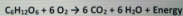
Q7- The active site of an enzyme is the region that ...

- A. Binds to substrate(s)
- B. Binds to a heme group
- C. Binds to an allosteric activator
- D. Binds to an allosteric inhibitor
- E. Binds to a noncompetitive inhibitor

Q8 - Which of the following is not a product from glycolysis ?

- A) H+
- B) NADH
- C) FADH<sub>2</sub>
- D) ATP

Q9. Which of the following statements describes the results of this reaction?



- A. C<sub>6</sub>H<sub>12</sub>O<sub>6</sub> is oxidized and O<sub>2</sub> is reduced
- B. O<sub>2</sub> is oxidized and H<sub>2</sub>O is reduced
- C. CO<sub>2</sub> is reduced and O<sub>2</sub> is oxidized
- D. C<sub>6</sub>H<sub>12</sub>O<sub>6</sub> is reduced and CO<sub>2</sub> is oxidized
- E. O<sub>2</sub> is reduced and CO<sub>2</sub> is oxidized

Q10 . How many carbon dioxide release when oxidized 1mol of glucose in glycolysis..

- A) 0
- B) 1
- C) 2
- D) 4
- E) 6

Q11. If NAD<sup>+</sup> accept hydrogen and an electron it will be..

- A) Reduced
- B) Oxidized
- C) Hydrolysis
- D) Hydrogenated

Q12. Cooperativity is.

- A. substrate molecule binding to one active site in an enzyme trigger a shape change that increase activity active sites in all subunits
- B. substrate molecule binding to one active site in an enzyme trigger a shape change that inhibits active sites in all subunits
- C. allosteric regulation binding to one active site in an enzyme trigger a shape change that increase activity in all subunits

Q13. Which of the following is mobile?

- A) Protein Complex I
- B) Protein Complex II
- C) Protein Complex III
- D) Ubiquinone
- E) Protein Complex IV

Q14. The pumping of the proton ions from the mitochondrial matrix results in:

- a. NAD<sup>+</sup> reduction
- b. NADH oxidation
- c. proton motive force in the inter membrane space
- d. proton motive force in the mitochondrial matrix
- e. transport of electron

Q15. Oxidative phosphorylation occurs in:

- a. mitochondrial matrix
- b. inner membrane
- c. intermembrane space
- d. cytosol
- e. outer membrane

Q16. How much CO<sub>2</sub> is produced from the oxidation of one Pyruvate?

- a. 1
- b. 2
- c. 3
- d. 4
- e. 6

Q17. what is the major redox reaction occur in glycolysis?

- A) H<sub>2</sub>O
- B) NADH
- C) FADH<sub>2</sub>
- D) ATP
- E) fructose 6-phosphate

Q18. NAD<sup>+</sup> is reduced to NADH during glycolysis by :

Ans : electrons coming from G3P

Q19. Organisms:

- A) Close system
- B) Open system
- C) Large system
- D) Small system
- E) Free system

Q20. Which enzyme is used in this step: (fructose 6-phosphate → fructose-1,6-bisphosphate)?

- A phosphofructokinase
- B phosphoglycerokinase
- C glucose dehydrogenase

Ans : phosphofructokinase



Q21. Most of the electron transport chain components are made of:

- A lipids
- B proteins
- C metals

Q22. Oxygen that enters the cellular respiration is converted to:

Ans : water

Q23 . Glycolysis regenerate ATP by:

Ans : substrate level phosphorylation

Q24 Fermentation regenerate atp by:

- A substrate level phosphorylation
- B substrate level dephosphorylation
- C oxidative phosphorylation

Q25 Citric acid cycle regenerate atp by:

- A substrate level phosphorylation
- B substrate level dephosphorylation
- C oxidative phosphorylation

Q26. Which of the statements are false about NAD<sup>+</sup>:

- A contains nitrogen
- B the oxidized form of NADH
- C has less energy than NADH
- D denotes electrons to the electrons transport chain

Q27. The role of sulfate ion in anaerobic respiration:

- A accepts electrons in the end of electrons transport chain
- B accepts electrons during citric acid cycle
- C denotes electrons in the electrons transport chain

Q28. FADH<sub>2</sub> donates its electrons in the electron transport chain to:

- A protein complex I
- B protein complex II
- C protein complex III
- D cyt c3

Q29. Chemical work is defined as:

- A pushing endergonic reactions which can not occur spontaneously by itself and make it spontaneous
- B transport sodium against the gradient
- C beating cilia
- D muscle contractions

Q30. What does FAD<sup>+</sup> accept to be FADH<sub>2</sub>:

- A-1electron 1proton
- B- 2electrons 1proton
- C- 2electrons 2protons

Q31 . To enter acetyl-CoA to the citric acid cycle, it's binds to:

- A citric acid
- B Oxaloacetate
- C alpha ketoglutarate

Q32. The active site of enzyme is where the:

- A) the noncompetitive inhibitors bind
- B ) the competitive inhibitors bind
- C ) the allosteric inhibitor bind
- D ) the substrate(s) bind
- E) B&D

Q33. Noncompetitive inhibitors inhibit the enzyme by:

- A) decreasing the activation energy
- B) binding to the active site
- C) changing the enzyme shape

Q34 : Which of the following is affecting the enzyme activity:

- A) temperature
- B) pH
- C) competitive inhibition
- D) noncompetitive inhibition
- E) all of the above

Q35- The immediate energy form that drive ATP synthesis by ATP synthase:

- A) electron flow chain
- B) proton gradient across the mitochondrial membrane

Q36- Which of the following is true about NAD<sup>+</sup>:

- A) is reduced to NADH during glycolysis, Pyruvate oxidation, citric acid cycle
- B) is oxidized by dehydrogenase
- C) donates electrons to the electron transport chain
- D) glycolysis can occur without it

Q37- Catabolic pathway:

- A) include glycolysis and citric acid cycle
- B) endergonic reaction
- C) non spontaneous reaction
- D) does not need catalytic enzymes

Q38) If a certain reaction has  $\Delta G = -200$ , which of the statements is true:

- A) products has less energy than reactants
- B) reactants has less energy than products
- C) the reaction is endergonic

Q39) Activation energy is defined as:

- A) the energy needed to break reactants bonds
- B) the energy needed to form products bonds
- C) the energy released from breaking reactants bonds

Q40) Glycolysis:

- A. splitting glucose to pyruvate
- B. splitting glucose to acetyl CoA

Q41) Which stage of cellular respiration occur outside the mitochondria:

- A)electron transport chain
- B)glycolysis
- C)oxidative phosphorylation
- D)Pyruvate oxidation

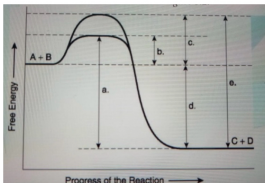
Q42) If a reaction has  $\Delta G = -10$  , which of the following is true:

- A) exergonic reaction
- B) spontaneous reaction
- C) need a catalyst
- D) all of them

Q43) Which of the following occur in aerobic respiration, anaerobic respiration, fermentation:

- A) glycolysis
- B) oxidative phosphorylation

.) what is type of Reaction?





Bio second 2022 | By Farah Thaher

Q) How many FADH<sub>2</sub> produce from one turn of citric acid cycle?

A)0

B)1

C)2

D)3

E)4

ANS: B

Q) How many electrons and protons respectively we need when FAD converted to FADH<sub>2</sub>?

- A) 1,1
- B) 1,2
- C) 2,2
- D) 2,1

ANS: c

Q)What is the enzyme that transforms fructose 6 phosphate to fructose 1,6 bisphosphate?

A)Hexokinase

B)Phosphoglucomutase

C)Phosphoglycerate kinase

D) Triose phosphate

E) Phosphofructokinase

ANS : E



Q) When the saturated state is achieved, how we can increase the rate of reactions ?

- A) Add competitive inhibitors
- B) Add more enzymes
- C) Add noncompetitive inhibitors
- D) Decrease temperature

ANS : B

Q) how enzymes increase the rate of the reaction ?

- A) Decrease the free energy
- B) Decrease reactant free energy
- C) Decrease product free energy
- D) Orienting substrate incorrectly
- E) Decrease  $E_a$  barrier

ANS : E

Q) How many carbon in PYRUVATE molecule ?

A) 2

B) 3

C) 4

D) 5

E) 6

ANS : B

Q) What is the end product of glycolysis?

- A) Glucose
- B) PYRUVATE
- C) DHAP
- D) GA3p
- E) Fructose

ANS : B

Part of cellular respiration that occurs out of mitochondria?

- A) Glycolysis
- B) Krebs cycle
- C) Electron transport chain
- D) Fermentation
- E) A+B

ANS : A

Q) Cellular respiration can be summed up in the following reaction?

- A)  $6\text{CO}_2 + 6\text{H}_2\text{O} \rightarrow \text{C}_6\text{H}_{12}\text{O}_6 + 6\text{O}_2$
- B)  $\text{C}_6\text{H}_{12}\text{O}_6 + 6\text{CO}_2 \rightarrow 6\text{O}_2 + 6\text{H}_2\text{O}$
- C)  $\text{C}_6\text{H}_{12}\text{O}_6 + 6\text{O}_2 \rightarrow 6\text{CO}_2 + 6\text{H}_2\text{O}$

ANS :C

Q) process of cellular respiration can occur in aerobic and anaerobic condition?

- A) Glycolysis
- B) Krebs cycle
- C) Electron transport chain
- D) PYRUVATE dehydrogenase
- E) A+ C

ANS : A

Q) Which of the following is false ?

- A) Endergonic rxns consume energy
- B) Exergonic rxns have negative delta G
- C) Endergonic and exergonic need the same amount of energy
- D) Exergonic release energy

ANS : c



Q) How many chemical step in glycolysis?

A) 7

B) 8

C) 9

D) 10

E) 11

ANS: D



## **Biology | second exam**

Doctor 2021

1. in cellular respiration, the process that generates almost 90% of the ATP is.
  - A. de-phosphorylation
  - B. re-phosphorylation
  - C. substrate-level phosphorylation
  - D. phosphorylation
  - E. oxidative phosphorylation
  
2. What is ATP made from?
  - A. adenosine + high energy electrons
  - B. AMP + ALP
  - C. ADP + phosphate
  - D. Deoxy ribose and 3 phosphate groups
  - E. None of choices are correct
  
3. The process oxidation of pyruvate to Acetyl Co-A, takes place... the citric acid cycle
  - A. While
  - B. After
  - C. All given choices are incorrect
  - D. All given choices are correct
  - E. Before
  
4. Coenzymes are nonorganic enzyme cofactors
  - A. True
  - B. False
  
5. In alcohol fermentation, NAD<sup>+</sup> is regenerated from NADH by
  - A. reduction of pyruvate to form lactate
  - B. reduction of acetaldehyde to form ethanol
  - C. reduction of ethanol to form pyruvate
  - D. oxidation of pyruvate to form acetyl COA
  - E. oxidation of acetaldehyde to form ethanol
  
6. Which of the following is FALSE about the using of proteins as fuel?
  - A. Firstly, they must be digested to their building blocks amino acids
  - B. Many of the amino acids are used by the organism to build new proteins
  - C. The nitrogenous waste is excreted from the animal in the form of ammonia (NH<sub>3</sub>). urea, or other waste products
  - D. After amino acids can feed into glycolysis or the citric acid cycle, their amino groups must be removed, a process called deamination
  - E. All of the options are false

7. Glycolysis has..... steps, while citric acid cycle has ..... steps
- A. Ten, eight
  - B. Eight, ten
  - C. Ten,two
  - D. Two, ten
  - E. Ten,eight
8. In citric acid cycle, the Acetyl Co-A enters the cycle by reacting with
- A. Citrate
  - B. Malonate
  - C. Succinate
  - D. Oxaloacetate
  - E. Alpha Keto-glutarate
9. In lactic acid fermentation, the final electron acceptor is
- A. Oxygen
  - B. CO<sub>2</sub>
  - C. Alcohol
  - D. Sugar
  - E. Pyruvate
10. What term is used to describe the transfer of free energy from exergonic reactions to endergonic pathways?
- A. Feedback regulation
  - B. energy coupling
  - C. entropy
  - D. bioenergetics
  - E. cooperativity
11. Allosteric enzyme regulation is usually associated with
- A. The need for cofactors
  - B. an enzyme with more than one subunit
  - C. feedback inhibition
  - D. lack of cooperativity
  - E. activating activity

|    |     |
|----|-----|
| 1  | E   |
| 2  | C   |
| 3  | E   |
| 4  | B   |
| 5  | • B |
| 6  | • D |
| 7  | A   |
| 8  | D   |
| 9  | E   |
| 10 | B   |
| 11 | B   |

## Second 020

### Chapter 6

1. Which of the following statements is true concerning catabolic pathways?

- A. They are spontaneous and do not need enzyme catalysis
- B. They are endergonic
- C. They supply energy, primarily in the form of ATP, for the cell's work
- D. They combine molecules into more energy-rich molecules
- E. They build up complex molecules such as protein from simpler compounds

Answer : C

2. The following can affect enzymatic activity, except:

- A. Temperature
- B. None of the choices
- C. Feedback inhibition
- D. Presence of coenzymes
- E. Cooperativity

Answer : B

3. Altered amino acids at the active site, can result in novel enzyme activity.

True/ False

4. A catalyst is a chemical agent that speeds up a reaction without being consumed by the reaction.

True/ False

5. A chemical reaction that has a positive delta G is correctly described as:

- A. Endergonic
- B. Exothermic
- C. Enthalpic
- D. Exergonic
- E. Spontaneous

Answer : A

6. Cooperativity is a form of allosteric regulation.

True/ False

7. Cells are always in equilibrium.

True/ False

8. Why is ATP an important molecule in metabolism?

- A. It provides energy coupling between exergonic and endergonic reactions
- B. Its terminal phosphate group contains a strong covalent bond that, when hydrolyzed, releases free energy
- C. It is one of the four building blocks for DNA synthesis
- D. Its hydrolysis provides an input of free energy for exergonic reactions
- E. Its terminal phosphate bond has higher energy than the other two

Answer : A

9. Which of the following best describes the beta oxidation?

- A. Catabolism of fatty acids
- B. Catabolism of proteins
- C. Catabolism of glucose
- D. Anabolism of fatty acids
- E. Anabolism of glucose

Answer : A

10. A solution of starch at room temperature does not readily decompose to form a solution of simple sugars because:

- A. Starch hydrolysis is nonspontaneous
- B. The starch solution has less free energy than the sugar solution
- C. The hydrolysis of starch to sugar is endergonic
- D. Starch cannot be hydrolyzed in the presence of so much water
- E. The activation energy barrier for this reaction cannot be overcome

Answer : E

11. The reaction  $A + B \rightarrow C$  has a  $\Delta G$  of  $C = 15 \text{ kcal/mol}$ . How many ATP molecules are needed to provide the energy needed:

- A. 15 ATP
- B. 0 ATP
- C. 2 ATP
- D. 3 ATP
- E. 1 ATP

Answer : C

12. An anabolic pathway in a cell releases free energy in a series of reactions.

True/ False

13. If an enzyme in solution is saturated with substrate, the most effective way to obtain a faster yield of products is to:

- A. Add more of the enzyme
- B. Add more substrate
- C. None of the choices
- D. Heat the solution to 80 C°
- E. Add a non competitive inhibitor

Answer : A

14. Cofactors are non protein enzyme helpers.

True/ False

15. ATP is composed of ribose, alanine and three phosphate groups

True/ False

16. The free energy change of a reaction tells us whether or not the reaction occurs spontaneously.

True/ False

17. The active site of an enzyme is the region that:

- A. Binds non competitive inhibitors of the enzyme
- B. Binds allosteric regulators of the enzyme
- C. Is involved in the catalytic reaction of the enzyme
- D. All of the options
- E. Is inhibited by the presence of the coenzyme or a cofactor

Answer : C



18. Allosteric inhibitors act at :

- A. Noncompetitive inhibitors
- B. Coenzymes
- C. Competitive inhibitors
- D. Cofactors
- E. Either competitive or non competitive inhibitors

Answer : A

19. ———— is when one substrate molecule primes an enzyme to act on additional substrate molecules more readily:

- A. Catalysis
- B. Cooperativity
- C. Catabolism
- D. Activation energy
- E. Feedback inhibition

Answer : B

## Chapter 10

. In glycolysis a total of 4 ATP are formed after oxidation of one glucose molecule.

True/ False

. Which of the following generates ATP by fermentation?

- A. Substrate level phosphorylation
- B. Aerobic respiration
- C. Oxidative phosphorylation
- D. Electron transport chain
- E. Chemiosmosis

Answer : A

.. Kinases such as pyruvate kinase or hexokinase transfer:

- A. ATP from the matrix to the intermembrane space
- B. Electrons from NADH to glyceraldehyde
- C. A phosphate group from a substrate to ADP or from ATP to a substrate
- D. Glyceraldehyde 3- phosphate to 1,3 biphosphoglycerate during glycolysis
- E. A phosphate group from ADP to ATP

Answer : C

.. In alcohol fermentation,  $\text{NAD}^+$  is regenerated from NADH through the reduction of pyruvate to form lactate.

True/ False

†. High level of citric acid inhibits phosphofructokinase. This is an example of:

- A. Feedforward inhibition
- B. The specificity of enzymes for their substrates
- C. Feedback inhibition
- D. Competitive inhibition
- E. Non competitive inhibition

Answer : C

. In electron transport chain FADH<sub>2</sub> donates electrons to:

- A. Iron sulfur within complex II
- B. Ubiquinone
- C. Cytochrome C
- D. Complex I
- E. NADH

Answer : A

. The products of the citric acid cycle include all of the following except:

- A. ATP
- B. NAD<sup>+</sup>
- C. CO<sub>2</sub>
- D. FADH<sub>2</sub>
- E. GTP

Answer : B

. During chemiosmosis in the mitochondria:

- A. The electrons are transported from cytochrome to oxygen
- B. Protons flow back from the intermembrane space to the matrix through the ATP synthase
- C. Protons are pumped from the matrix to the intermembrane space
- D. Electrons are transported from complex I to complex III
- E. The pH in the matrix increases

Answer : B

. Oxidation of one NADH in the electron transport chain produces more H<sup>+</sup> gradient than one FADH<sub>2</sub> .

True/ False

. In tricarboxylic acid cycle

- A. Two FADH<sub>2</sub> are produced per one glucose molecules
- B. Succinate is combined to CO<sub>2</sub> to produce FADH<sub>2</sub>
- C. One acetyl CoA is oxidized to produce 3 CO<sub>2</sub>
- D. One ATP is formed by oxidative phosphorylation
- E. Acetyl CoA is combined with succinate to form citric acid

Answer : A

In electron transport chain FADH<sub>2</sub> donates electrons to:

- A. Ubiquinone
  - B. Iron sulfur with complex II
  - C. NADH
  - D. Cytochrome C
  - E. Complex I
- Answer : B

. The partial degradation of sugars through alcohol fermentation produces CO<sub>2</sub>.

True/ False

.. The products of the citric acid cycle include all of the following except:

- A. NAD<sup>+</sup>
  - B. FADH<sub>2</sub>
  - C. GTP
  - D. ATP
  - E. CO<sub>2</sub>
- Answer : A

.. During aerobic respiration , electrons travel downhill in which sequence?

- A. Food -> NADH -> electron transport chain-> oxygen
- B. Food -> citric acid cycle-> ATP -> NAD<sup>+</sup>
- C. Glucose-> ATP -> electron transport chain-> NADH
- D. Food-> glycolysis-> citric acid cycle-> NADH-> ATP
- E. Glucose-> pyruvate-> ATP-> oxygen

Answer : A

. During glycolysis aldolase directly splits glucose 6-phosphate into two 3-carbon compounds.

True/ False

. Electrons donated by one FADH<sub>2</sub> molecule to the electron transport chain create proton motive force enough to to produce \_\_\_\_\_ ATP:

- A. 30 or 32
  - B. 1
  - C. 4
  - D. 1.5
  - E. 6
- Answer : D

. The partial degradation of sugars through fermentation does not require an oxidizing agent .

True/ False

. The enzyme that extracts electrons from food during cellular respiration is termed :

- A. Isomerase
- B. Aldolase
- C. Enolase
- D. Dehydrogenase
- E. Kinase

Answer : D

. Similar to oxidation of one glucose molecule, complete oxidation of two pyruvate molecules to CO<sub>2</sub> and H<sub>2</sub>O yields up to 32 ATP

True/ False

The step of pyruvate oxidation to acetyl CoA in eukaryotic cells:

- A. Occurs upon entering the matrix of the mitochondria across the inner membrane
- B. Involves a kinase enzyme
- C. Occurs if oxygen is present or not
- D. Consumes NADH
- E. Produces NAD<sup>+</sup> and CO<sub>2</sub>

Answer : A

. In alcohol fermentation, NAD<sup>+</sup> is regenerated from NADH through the oxidation of ethanol to acetyl CoA.

True/ False

. In the mitochondrial electron transport chain, the final electron acceptor is :

- A. O<sub>2</sub>
- B. CO<sub>2</sub>
- C. H<sub>2</sub>O
- D. Cytochrome a<sub>3</sub>
- E. ADP

Answer : A

When muscles lack sufficient oxygen during intense exercises, which process will these muscles mainly use to regenerate ATP

- A. Lactic acid fermentation
- B. Only glycolysis, with NAD<sup>+</sup> not utilized
- C. The citric acid cycle
- D. Alcohol fermentation
- E. Chemiosmosis

Answer : A

In cellular respiration, beta oxidation involves:

- A. Oxidation of pyruvate
- B. Oxidation of glucose
- C. Regulation of glycolysis
- D. Breakdown of fatty acids
- E. Production of alcohol

Answer : D

In cellular respiration 4 ATP (net ) are produced by substrate level phosphorylation per one glucose molecule.

True/ False

Phosphofructokinase (PFK) catalyzes a regulatory step in cell respiration. PFK is stimulated by high level of which of the following molecules:

- A. ATP and citrate
- B. Citrate and CO<sub>2</sub>
- C. ATP
- D. Glucose and NAD<sup>+</sup>
- E. AMP

Answer : E

In oxidative phosphorylation:

- A. Protons are pumped from the matrix to the intermembrane space
- B. Proton motive force forms around the inner membrane of the mitochondria
- C. The electrons are transported to oxygen
- D. All answers are correct
- E. Electrons are transferred from NADH to complex I

Answer : D

. The partial degradation of sugars through fermentation produces ATP without the use of oxygen.

True/ False

. In alcohol fermentation,  $\text{NAD}^+$  is regenerated from NADH through the reduction of acetaldehyde to ethanol ( ethyl alcohol )

True/ False

. Some prokaryotes use anaerobic respiration to harvest more energy from sugar than fermentation can.

True/ False

.. During cellular respiration, the energy in glucose:

- A. Is used to produce oxygen
- B. Is released all at once
- C. Becomes stored in molecules of  $\text{CO}_2$
- D. Is released when electrons extracted from glucose flow in the electron transport chain
- E. Is stored in citric acid in Krebs cycle

Answer : D

.. Complete oxidation of one acetyl CoA in Krebs cycle produces 1 ATP by substrate level phosphorylation.

True/ False

. Which of the following will happen when the cell has high level of citrate

- A. Inhibition of citrate synthase and the slowdown of Krebs cycle
- B. Stimulation of phosphofructokinase and the speed up of Krebs cycle
- C. High level of citrate does not affect cell respiration
- D. Inhibition of citrate synthase and the slowdown of glycolysis
- E. Inhibition of phosphofructokinase and the slowdown of glycolysis

Answer : E

. The number of protons estimated to be pumped by the complexes of the electron transport chain when electrons are donated by one NADH molecule:

- A. 14
- B. 10
- C. 2
- D. 4
- E. 6

Answer : B

. When muscle becomes oxygen- deprived, muscle cells convert pyruvate to lactate. What happens to the lactate in the muscle cells?

- A. It's converted to alcohol
- B. It's taken to the liver and converted back to pyruvate
- C. It's converted to NAD<sup>+</sup>
- D. It reduces FADH<sub>2</sub> to FAD<sup>+</sup>
- E. It produces CO<sub>2</sub> and water

Answer : B

. The stator of the ATP synthase holds both the knob and the rod stationary (not rotating ) during phosphorylation.

True/ False

. The partial degradation of sugars through fermentation produces less that ATP than cellular respiration.

True/ False

. The yield of ATP after complete oxidation of one acetyl CoA to CO<sub>2</sub> and water is

- A. 10
- B. 18
- C. 20
- D. 24
- E. 12

Answer : A



78. During glycolysis aldolase splits fructose 1,6 biphosphate into two 3- carbon compounds.

True/ False

79. In eukaryotic cells , the energy yield from the complete oxidation of one molecule of glucose:

- A. Is always 32 ATP
  - B. Is always 10 protons
  - C. Is 30 or 38 ATP
  - D. Can vary depending on whether NADH from glycolysis passes electrons to NAD+ or FAD+
  - E. Is less than the yield from fermentation
- Answer : D

80. In prokaryotic cells , enzymes for cellular respiration are located in mitochondria.

True/ False

81. Where is ATP synthase catalytic part located in the mitochondria?

- A. Mitochondrial matrix
- B. Intermembrane space
- C. Electron transport chain
- D. Inner membrane lipid core
- E. Outer membrane

Answer : A