# BIOLOGY

## BOOKS - S DINESH & CO BIOLOGY (HINGLISH)

## RESPIRATION

### Multiple Choice Questions

**1.** Respiration converts potential or stored energy of food into

A. Chemical energy

B. Mechanical energy

C. Kinetic energy

D. All forms of energy

**Answer: A**

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**2.** Cellular respiration is

A. Continuous

B. Intermittent

C. Performed at intervals

D. Held when energy is required

**Answer: A**

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**3.** The term respiration was given by

A. Lavosier

B. Dutrochet

C. Sachs

D. Krebs

**Answer: B**

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**4.** Respiration is

A. Anabolic and exergonic

B. Anabolic acid endergonic

C. Catabolic and exergonic

D. Catabolic and endergonic

**Answer: C**

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**5.** Who is credited with study of external respiration for the first time

A. Dutrochet

B. Pasteur

C. Cruickashank

D. Lavosier.

**Answer: D**

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**6.** External respiration is

A. Respiration in skin cells

B. Gaseous exchange between organism and external environment

C. Gaseous exchange between cells and tissue fluid

D. Both B and C

**Answer: B**

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**7.** Tissue respiration denotes

A. Respiration denotes

B. Gaseous exchange between cell and tissue fluid

C. Cell respiration

D. Both B and C

**Answer: D**

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**8.** Usable energy available from respiration is

A. 0.1

B. 0.3

C. 0.4

D. 0.5

**Answer: D**

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**9.** Ussable energy of respiration is

A. Immediately consumed in cellular activities

B. Trapped in ATP molecules

C. Stored as heat

D. Used in charging biomolecules into activity

**Answer: B**

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**10.** In respiration, the energy not captured by ATP is

A. Transferred to organic compounds

B. Converted into heat

C. Liberated alongwith $CO_2$

D. Transferred to water.

**Answer: B**

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**11.** Net rate of respiration is higher than that of photosynthesis. The plant will

A. Not die

B. Die of starvation

C. continue to live but not grow

D. Show better growth due to greater availability of energy.

**Answer: B**

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**12.** The difference between respiration and combustion is related to respiration being

A. Multistep

B. Enzyme controlled

C. Intracellular

D. All the above

**Answer: D**

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**13.** Dark respiration is

A. Cellular respiration

B. Found in deeper tissues and roots

C. Found only during night

D. Both B and C

**Answer: A**

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**14.** Caloric value of 9.5 kacal/gm is found in case of

A. Carbohydrates

B. Fats

C. Proteins

D. Vitamins

**Answer: B**

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**15.** The most common respiratory substrate is

A. Glucose

B. Sucrose

C. Maltose

D. Glycogen

**Answer: A**

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**16.** Floating respiration is respiration

A. Occurring in cytosol

B. Using carbohydrate as substrate

C. Employing fat as respiratory substrate

D. Both B and C

**Answer: D**

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**17.** Protoplasmic respiration is respiration

A. Occurring in protoplasm

B. Controlled by genetic factors

C. Occurring outside the mitochondira

D. Employing proteins as respiratory substrate.

**Answer: D**

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**18.** Biological oxidation of respiratory substrate causes

A. Gain of oxygen

B. Gain of hydrogen

C. Loss of oxygen

D. Loss of hydrogen.

**Answer: D**

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**19.** Which one yields the highest energy per gram

A. Carbohydrate

B. Protein

C. Fat

D. Amino acids.

**Answer: C**

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**20.** Which one provides twice as much energy as carbohydrates

A. Vitamins

B. Proteins

C. Minerals

D. Fats

**Answer: D**

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**21.** Energy released per gram would be

A. Highest when Wheat starch is respiratory substrate

B. Highest when Potato starch is respiratory substrate

C. Same in all the cases.

D.

**Answer: D**

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**22.** More energy is produced in aerobic respiration than anaerobic respiration because in anaerobic respiration

A. Food is incompletely oxidised

B. Very few enzymes are involved

C. Oxygen is not required

D. Alcohol is produced

**Answer: A**

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**23.** Aerobic respiration is more advantageous than anaerobic respiration because

A. It requires oxygen

B. It produces more energy

C. It causes complete break down of respiratory substrate

D. Aerobic respiration produces water.

**Answer: B**

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**24.** R.Q. stands for

A. Resistance coefficient

B. Replicase concentration

C. Respiratory quotient

D. Reticular concentration

**Answer: C**

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**25.** R.Q. indicates

A. Effect of temperature

B. Nature of respiratory substrate

C. Amount of water released

D. Type of alcohol formed.

**Answer: B**

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**26.** In respiration of substrate of organic acids, the R.Q. shall be

A. Unity

B. Less than one

C. Zero

D. More than one.

**Answer: D**

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**27.** Which one of the following has the highest R.Q.

A. Malic acid

B. Protein

C. Fat

D. Starch.

**Answer: A**

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**28.** R.Q. for protein is

A. 1.4

B. 0.5

C. 0.7-0.9

D. Unity.

**Answer: C**

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**29.** R.Q. is infinity. Respiration is

A. Aerobic, carbohydrate

B. Aerobic, fat

C. Aerobic, protein

D. Anaerobic, carbohydrate.

**Answer: D**

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**30.** Amount of energy available per mole of oxygen used in biological oxidation is

A. 114 kcal

B. 686 kcal

C. 256 kcal

D. 60 kcal

**Answer: A**

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**31.** Number of ATP formed per molecule of oxygen used in respiration is

A. 16

B. 8

C. 6

D. 4

**Answer: C**

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**32.** The different steps of aerobic respiration are

A. Glycolysis and oxidative phosphorylation

B. Glycolysis and Krebs cycle

C. Glycolysis, Krebs cycle and terminal oxidation

D. Kerbs cycle and terminal oxidation.

**Answer: C**

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**33.** Types of aerobic respiration are

A. Glycolysis and HMP

B. Common pathway and HMP

C. Krebs cycle and PPP

D. Terminal oxidation and common pathway

**Answer: B**

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**34.** What is common in common pathway of aerobic respiration

A. Glycolysis in both aerobic and anaerobic respiration

B. Kerbs cycle common with HMP

C. Terminal oxidation in both aerobic and anaerobic respiration

D. Kerbs cycle in both aerobic and anaerobic respiration

**Answer: A**

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**35.** For the start of respiration, a living cell requires

A. Glucose

B. Glucose $+O_2$

C. $O_2$

D. Glucose $+ATP$

**Answer: D**

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**36.** For undergoing glycolysis, glucose requires priming with the help of ATP

A. 1

B. 2

C. 3

D. 4

**Answer: B**

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**37.** Most common mineral activator of glycolytic enzymes is

A. Fe

B. Zn

C. Mg

D. Mn

**Answer: C**

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**38.** Phosphorylation of glucose with the help of ATP and hexokinase produces

A. Glucose 1-phosphate

B. Glucose 6-phosphate

C. Glucose 1,6-biphosphate

D. Fructose, 1,6-biphosphate

**Answer: B**

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**39.** Number of oxygen molecules required for glycolytic breakdown of one glucose molecule is

A. Zero

B. Three

C. Six

D. Thirty eight

**Answer: A**

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**40.** Which one is removed from substrate during glycolysis

A. Hydrogen

B. Electrons

C. Both A and B

D. Oxygen

**Answer: C**

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**41.** Which one is inhibited if the cells contain excess of ATP

A. Krebs cycle

B. Glycolysis

C. Oxidative phosphorylation

D. Electron transport

**Answer: B**

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**42.** Which one of the following is wrong about glycolysis

A. It uses ATP

B. It produces ATP

C. End products are $CO_2$ and $H_2$

D. NADH $(H^+)$ is produced

**Answer: C**

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**43.** Site of glycolysis or EMP is

A. Mitochondira

B. Cytoplasm

C. E.R.

D. Ribosomes

**Answer: B**

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**44.** The intermediate of glycolysis which undergoes lysis or splitting is

A. Dihydroxyacetone 3-phosphate

B. Fructose 1, 6-diphosphate

C. Glyceraldehyde 3-phosphate

D. Glucose 6-phosphate.

**Answer: B**

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**45.** Phosphoglyceraldehyde and dihdroxy acetone phosphate are

A. Isomers

B. Polymers

C. Tautomers

D. Synonyms

**Answer: A**

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**46.** Substrate phosphorylation is the formation of

A. ATP

B. AMP

C. ADP

D. Pyruvic acid

**Answer: A**

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**47.** Which is formed alongwith ATP in glycolysis

A. NADH

B. NADPH

C. FAD

D. $FADH_2$

**Answer: A**

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**48.** Respiratory formation of ATP during the reactions 1,3-diphosphoglyceric acid $\rightarrow$ 3-phosphoglyceric acid and phosphenol pyruvate $\rightarrow$ Pyruvates is

A. Oxidative phosphorylation

B. Substrate level phosphorylation

C. Respiratory phosphorylation

D. Chemical phosphorylation

**Answer: B**

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**49.** Oxidation of glyceraldehyde phosphate is accompanied by

A. Oxidation of $NAD^+$

B. Substrate level phosphorylation

C. Reduction of $NAD^+$

D. Oxidative phosphorylation.

**Answer: C**

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**50.** Formation of phosphoenol pyruvate from 2-phosphoglycerate is

A. Dehydration

B. Dehydrogenation

C. Oxidation

D. Hydration.

**Answer: A**

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**51.** Who found out the steps involved in aerobic respiration

A. Krebs

B. Lipmann

C. Devlin

D. Kolliker.

**Answer: A**

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**52.** An amphibolic pathway is

A. TCA cycle

B. Calvin cycle

C. Terminal oxidation

D. Electron transport chain.

**Answer: A**

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**53.** During conversion of pyruvic acid into acetyl CoA, pyruvic acid is

A. Reduced

B. Oxidised

C. Isomerised

D. Condensed

**Answer: B**

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**54.** Oxidation of pyruvate is accompanied by

A. Oxidation of $NAD^{+}$

B. Reduction of $NAD^+$

C. Oxidation of CoA

D. Reduction of CoA

**Answer: B**

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55. Coenzyme A helps in

A. Oxidative phosphorylation

B. Substrate level phosphorylation

C. Breakdown of pyruvate

D. Activation of acetyl group

**Answer: D**

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**56.** Number of carbon atoms present in citric acid, oxaloacetic acid and pyruvic acid are respectively

A. 6, 3 and 3

B. 6, 4 and 3

C. 5, 4 and 3

D. 6, 4 and 2

**Answer: B**

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**57.** Oxidation of pyruvate forms

A. Acetyl CoA

B. NADH

C. $CO_2$

D. All the above

**Answer: D**

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**58.** Removal of hydrogen and $CO_2$ from a substrate is called

A. Decarboxylation

B. Oxidation

C. Oxidative decarboxylation

D. Reductive decarboxylation.

**Answer: C**

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**59.** Krebs cycle produces

A. $2CO_2$

B. $3CO_2$

C. $4CO_2$

D. $6CO_2$

**Answer: A**

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**60.** Protons $(as NADH, FADH_2)$ taking par in oxidative phosphorylation enter mitochondira as

A. Glucose

B. Oxaloacetic acid

C. Acetyl CoA

D. Pyruvate

**Answer: D**

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**61.** Enzymes of citric acid or Krebs cycle occur in

A. Outer mitochondiral membrane

B. Inner mitochondiral membrane

C. Inter-membrane space

D. Mitochondrial matrix

**Answer: D**

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**62.** Inner mitochodrial membrane allows the passage of

A. Glucose

B. Pyruvate

C. NADH

D. Oxaloacetate

**Answer: B**

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**63.** Tricarboxylic acids of Kerbs cycle are

A. Succinic acid, Fumaric acid and Citric acid

B. Oxalosuccinic acid, Citric acid and $\alpha$-ketoglutaric acid

C. Citric acid, Isocitric acid and Malic acid

D. Citric acid, Isocitric acid and Oxalosuccinic acid.

**Answer: D**

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**64.** Number of ATP molecules synthesised through substrate level phosphorylation during aerobic respiration of one glucose molecules is

A. 8

B. 6

C. 4

D. 2

**Answer: B**

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**65.** In aerobic respiration, first $CO_2$ is liberated during

A. Oxidation of pyruvate

B. Decarboxylation of oxalosuccinate

C. Decarboxylation of $\alpha$-ketoglutarate

D. `Alcoholic fermentation

**Answer: A**

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66. A complex enzyme system of mitochondira functional outside Krebs cycle is

A. Pyruvate kinase

B. Pyruvate dehydrogenase

C. Enolase

D. $\alpha$-Ketoglutrate dehydrogenase

**Answer: B**

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67. A complex enzyme system functional in Krebs cycle is

A. Citrate sysnthetase

B. Isocitrate dehydrogenase.

C. Oxalosuccinate decarboxylase

D. $\alpha$-ketoglutarate dehydrogenase.

**Answer: D**

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**68.** Hydration reaction occurs in Krebs cycle during conversion of

A. Acetyl CoA to citric acid

B. $\alpha$-ketoglutrate to succinyl CoA

C. Succinate to fumarate

D. Fumarate to malate

**Answer: D**

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**69.** Fat has two components, glycerol and fatty acids. They enter common pathway of respiration as

A. DiHAP and $\alpha$-ketoglutrate

B. DiHAP and acetyl CoA

C. Glyeric acid and acetyl CoA

D. Glyceric acid and $\alpha$-ketoglutarate.

**Answer: B**

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**70.** In Krebs cycle, malate hands over hydrogen to

A. $NAD^+$

B. FAD

C. FMN

D. Oxaloacetate

**Answer: A**

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**71.** When succinate is oxidised in Krebs cycle, its hydrogen is accepted by

A. $NAD^{+}$

B. FAD

C. FMN

D. Fumarate.

**Answer: B**

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**72.** Mineral activator of enzyme aconitase is

A. Mn

B. Mg

C. Fe

D. Cu.

**Answer: C**

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**73.** Terminal oxidation comprises

A. Synthesis of metabolic water

B. Electron transport

C. Oxidative phosphorylation

D. All the above

**Answer: D**

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**74.** Formation of ATP in respiration is called

A. Photophosphorylation

B. Substrate phosphorylation

C. Oxidative phosphorylation

D. Phosphorylation

**Answer: C**

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**75.** Chemicals taking part in respiratory electron transport are

A. Flavin nucleotides

B. FeS and CoQ

C. Cytochromes

D. All the above

**Answer: A**

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**76.** Noncytochrome members of respiratory electron transport chain are

A. $FAD, NAD^{+} \text{ and } CoQ$

B. `FMN, FeS and CoQ

C. FAD, FeS and CoQ

D. $NAD^{+}, FMN \text{ and } CoQ$

**Answer: B**

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**77.** Which one passes protons to outer mitochondrial chamber

A. Fes

B. FMN

C. CoQ

D. Both B and C

**Answer: D**

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**78.** The mobile electron carrier of mitochondrial membrane is

A. $Cyt_{a_3}$

B. FeS

C. CoQ

D. $Cyt_{c_1}$

**Answer: C**

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**79.** Electron acceptors in ETS are arranged according to

A. Decreasing positive potential

B. Increasing positive potential

C. Increasing negative potential

D. None of the above

**Answer: B**

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**80.** When a pair of electron from $NADH(H^{+})$ is transported through respiratory ETS, it results in the formation of

A. 2 mol. Of ATP

B. 4 mol. Of ATP

C. 3 mol. Of ATP

D. 5 mol. Of ATP.

**Answer: C**

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**81.** Number of cytochrome molecules required for the transfer of a pair of electrons through ETS is

A. 1

B. 2

C. 3

D. 4

**Answer: B**

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**82.** In acerobic respiration which of the following is a reactant

A. $CO_2$

B. $O_2$

C. $H_2O$

D. Sugars

**Answer: B**

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**83.** During complet metabolism of glucose, the number of ATP formed is

A. 20

B. 32

C. 36

D. 40

**Answer: D**

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**84.** In electron transport chain, energy for ATP synthesis is produced when electrons pass between

A. $NADH(H^+) \rightarrow FAD$

B. $Cytb \rightarrow Cytc$

C. $Cyta \rightarrow Cyta_3$

D. All the above

**Answer: D**

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**85.** Cytochroms take part in

A. Respiration

B. Photosynthesis

C. Electron transport

D. Oxidation

**Answer: C**

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**86.** What is true for respiration

A. Oxygen is essential

B. Oxygen combines with carbon form $CO_2$

C. Oxygen combines with hydrogen to produce water

D. Oxygen is not essential

**Answer: C**

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**87.** Major function of respiration is to produce

A. $NADH(H^+)$

B. ATP

C. Pyruvate

D. $C_2H_5OH$

**Answer: B**

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**88.** In cytochromes, electrons are picked up and released by

A. Fe

B. Mo

C. Cu

D. Zn

**Answer: A**

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**89.** Oxygen required for terminal oxidation enters mitochondria as

A. Glucose

B. Activated acetic group

C. Oxygen gas

D. Pyruvic acid

**Answer: C**

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**90.** Electrons taking part in electron transport system inside mitochondira come from

A. Pyruvate

B. $NADH(H^+)$

C. $FADH_2$

D. Both B and C

**Answer: D**

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**91.** In electron transport system a carrier holds electron at

A. Higher energy level than the previous carrier

B. Lower energy level than the perivous carrier

C. Same energy level as the adjacent ones

D. Initially holds it at higher level but the electron loses energy during its contact with carrier.

**Answer: B**

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**92.** ATP molecules prodcued respectively by NaDH $(H^+)$ and $FADH_2$ during electron transport are

A. 3 and 2

B. 1 and 1

C. 2 and 3

D. 3 and 3

**Answer: A**

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**93.** Members of electron transport chain of respiration are present in

A. Mitochondrial matrix

B. Inter-membrane space

C. Inner mitochondrial membarane

D. Outer mitochondiral membrane.

**Answer: B**

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**94.** In mitochondriaon, the proton gradient required for ATP synthesis develops across

A. Inner membrane

B. Inter-membrane space

C. Outer membrane

D. $F_0 - F_1$ particles

**Answer: A**

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**95.** The correct equation of aerobic respiration is

A. $C_6H_8O_4 \rightarrow 6CO_2 \_ 4H_2O$

B. $C_6H_{12}O_6 + 6O_2 \rightarrow 6CO_2 + 6H_2O$

C. $C_6H_{12}O_6 + 6O_2 + 6H_2O \rightarrow 6CO_2 + 12H_2O + 686$ kcal

D. $C_2H_5OH + 3O_2 \rightarrow 2CO_3 + 3H_2O$

**Answer: C**

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**96.** Cytochrome which hands over electrons to oxygen during terminal oxidation is

A. Cyt b

B. Cyt a

C. Cyt c

D. $Cyta_3$

**Answer: D**

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97. $2NADH(H^+)$ produced during anaerobic glycolysis yiled

A. 6 ATP molecules

B. 4 ATP molecules

C. 8 ATP molecules

D. None of the above

**Answer: D**

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98. Oxidative phosphorylation of cytoplasmic $NADH(H^+)$ takes place in

A. Cytosol

B. E.R.

C. Mitochondria

D. Golgi bodies.

**Answer: C**

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**99.** Cytoplasmic NADH is oxidatively phosphorylated inside mitochondrion. Mitochondrion is impermeable to NADH. Entry into mitochondrion is effect through

A. Shuttle system

B. Faciliated diffusion

C. Active absorption

D. $F_0$ tunnel of elementary particles.

**Answer: A**

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**100.** In muscles and nerves, cytoplasmic NADH yields

A. 3 ATP

B. 2 ATP

C. 1 ATP

D. No ATP

**Answer: B**

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**101.** In heart, liver and kidneys, cytoplasmic NADH employs malate-aspartate shuttle that yields

A. 3 ATP

B. 2 ATP

C. 1 ATP

D. No ATP

**Answer: A**

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**102.** In pentose phosphate shunt, the number of NADPH formed per glucose molecule is

A. 12

B. 6

C. 2

D. 10

**Answer: A**

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**103.** In hexose monophosphate shunt, the net formation of ATP molecules is

A. 36

B. 35

C. 38

D. 34

**Answer: B**

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**104.** Hexose monophosphate pathway takes place in

A. Mitochondrial matrix

B. Cristae

C. Cytoplasm

D. E.R.

**Answer: C**

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**105.** Which one produces more energy per glucose molecule

A. Alcoholic fermentation

B. Glycolysis

C. Pentose phosphate pathway

D. Lactic acid fermentation

**Answer: C**

Watch Video Solution

**106.** Phosphogluconate shunt occurs in

A. Mitochondira

B. Chloroplasts

C. Cytoplasm

D. Both A and B

**Answer: C**

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**107.** Pentose phosphate pathway is a mode of

A. Amphibolic pathway

B. Anabolic pathway

C. Aerobic pathway

D. Anaerobic respiration.

**Answer: C**

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**108.** Which one undergoes decarboxylation in hexose monophosphate shunt

A. Glucose 6-phosphate

B. $6 - glucono\gamma - lac \rightarrow \neq$

C. 6-phosphogluconate

D. Fructose 6- phosphate

**Answer: C**

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**109.** The first pentose sugar formed in PPP of respiration in

A. Ribulose 5-phosphate

B. Ribose 5-phosphate

C. Xylucose 5-phosphate

D. Deoxyribose 5-phosphate

**Answer: A**

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**110.** Reduced coenzyme $NADPH(H^+)$ is produced in respiration during

A. Glycolysis

B. PPP

C. krebs cycle

D. Terminal oxidation

**Answer: B**

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**111.** The term Zymosis was coined by

A. Pasteur

B. Cruickshank

C. Kostytchev

D. Buchner

**Answer: A**

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**112.** "Life without air" was first studied by

A. Dubrunfaut

B. Pasteur

C. Berzelius

D. Cruickshank.

**Answer: B**

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**113.** The term fermentaiton was coined by

A. Cruickshank

B. Kostytchev

C. Pasteur

D. Buchner

**Answer: A**

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**114.** The term anaerobic respiration was coined by

A. Blackman

B. Duclaux

C. Kostytchev

D. Buchner

**Answer: C**

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**115.** Anaerobic respiration is

A. Complete oxidation

B. Incomplete oxidation

C. Anabolic reaction

D. Fermentation

**Answer: D**

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**116.** Buchner was successful in extracting a respiratory enzyme complex

A. ATP

B. NADH

C. Zymase

D. Mitochondria.

**Answer: C**

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**117.** An important requirement of fermentation is

A. Oxygen

B. Zymase

C. Fe

D. $CO_2$

**Answer: B**

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**118.** In muscles, anaerobic conditions change pyruvic acid to

A. $C_2H_5OH$

B. $C_3H_4O_3$

C. $C_3H_6O_3$

D. $C_{2_{H\,-}\,(4)\,O_4}$

**Answer: C**

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**119.** Which type of fermentation is accompanied by $CO_2$ evolution

A. Alcoholic fermentation

B. Lactic acid fermentation

C. Both A and B

D. None of the above

**Answer: A**

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**120.** Which is not formed during anaerobic respiration

A. Pyruvate

B. Ethyl alcohol

C. $CO_2$

D. Acetyl CoA.

**Answer: D**

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**121.** A gas is not produced during

A. Alcoholic fermentation

B. Aerobic respiration

C. Lactic acid fermentation

D. Both A and B

**Answer: C**

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**122.** Anaerobic respiration occurs in human body inside

A. Liver

B. Kidneys

C. Red muscles

D. White muscles.

**Answer: D**

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**123.** House sparrow can fly for short distances only because of the absence of

A. White muscles

B. Proper wing span

C. Pneumatic bones

D. Red muscles.

**Answer: D**

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**124.** Respiratory intermediate which undergoes fermentation is generally

A. Glyceraldehyde 3-phosphate

B. 2-phosphoglyceric acid

C. PEP

D. Pyruvic acid

**Answer: D**

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**125.** In alcoholic fermentation, $CO_2$ is evolved during

A. Decarboxylation of pyruvic acid

B. Formation of acetaldehyde

C. Oxidation of acetaldehyde

D. Both A and B

**Answer: D**

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**126.** Formation of lactic acid from pyruvate requires

A. Decarboxylation

B. Reduction

C. Oxidation

D. Hydration.

**Answer: B**

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**127.** A characteristic feature of some fruit ripening is sudden increase in respiration. It is known as

A. Climacteric

B. Anthesis

C. Climatic

D. Photorespiration

**Answer: A**

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128. Respiration is accompained by

A. Increase in weight

B. Decrease in weight

C. No change in weight

D. Decrease in size

**Answer: B**

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129. Fruits kept in refrigerator maintain their flavour and taste for longer period due to

A. Nonavailability of oxygen

B. Presence of excess $CO_2$

C. Presence of excess moisture

D. Slowing down of respiration

**Answer: D**

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**130.** Rate of respiration shall

A. Increase with rise in temperature

B. Decrease in the presence of light

C. Increase in winter

D. No change with season and environmental conditions

**Answer: A**

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**131.** A bottle containing germinating seeds is connected to a tube having lime water. After sometime, the lime water turns

A. Red

B. Brown

C. Green

D. White

**Answer: D**

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**132.** Pasteur effect is due to

A. Change from aerobic to anaerobic

B. Providing oxygen to anaerobically respiring structures

C. Rapid utilisation of ATP

D. Nonsynthesis of ATP

**Answer: B**

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**133.** Providing oxygen to anaerobically respiring structures leads to

A. Decreased ATP synthesis

B. Excess consumption of respiratory substrate

C. Hexose monophosphate shunt

D. More ATP synthesis in mitochondria.

**Answer: D**

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**134.** Wounding results in

A. Stoppage of growth

B. Infection

C. Decreased rate of respiration

D. Increased rate of respiration.

**Answer: D**

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## Revision Questions From Competitive Exams

**1.** Mitochondria are sites of

A. Oxidative phosphorylation

B. Photolysis

C. Phosphorylation

D. Starch synthesis.

**Answer: A**

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**2.** Krebs cycle takes place in

A. Vesicles of E.R.

B. Mitochondria

C. Dictyosomes

D. Chloroplasts.

**Answer: B**

Watch Video Solution

**3.** Energy currency (reservior) of the cells is

A. AMP

B. ATP

C. RNA

D. DNA.

**Answer: B**

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**4.** The reactions of Krebs/citric acid cycle take place

A. In the cytoplasm

B. In ER

C. In matrix of mitochondira

D. On the surface of mitochondria

**Answer: C**

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**5.** The other name of glycolysis is

A. EMP-pathway

B. TCA-pathway

C. HMS-pathway

D. Carbon-pathway

**Answer: A**

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**6.** The number of molecules of pyruvic acid formed from one molecule of glucose at the end of glycolysis is

A. 1

B. 2

C. 3

D. 4

**Answer: B**

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**7.** The enzyme which converts glucose to glucose 6-phosphate is

A. Phosphorylase

B. Glucose-6 phosphatase

C. Hexokinase

D. Pyruvic acid to lactic acid.

**Answer: C**

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**8.** Pyruvic dehydrogenase is used in converting

A. Pyruvic acid to acetyl co-enzyme A

B. Pyruvate to glucose

C. Glucose to pyruvate

D. Pyruvic acid to lactic acid.

**Answer: A**

Watch Video Solution

**9.** The respiratory enzymes are located in

A. Mitochondrial matrix

B. Perimtochondrial space

C. Cristae

D. Outer membrane

**Answer: A**

Watch Video Solution

**10.** Fermentation is

A. Anaerobic respiration

B. Incomplete oxidation

C. Complete oxidation of carbohydrates

D. None of the above

**Answer: A**

Watch Video Solution

**11.** R.Q. for fatty substance/fat is

A. Unity

B. Greater than one

C. Less than one

D. Zero

**Answer: B**

Watch Video Solution

**12.** R.Q. for glucose (carbohydrates) is

A. 1

B. 0.5

C. 2

D. 0.05

**Answer: A**

Watch Video Solution

**13.** The amount of energy given by one mole of ATP is

A. 7.3 kcal

B. 721 kcal

C. 7600 kcal

D. 1000 kcal.

**Answer: A**

Watch Video Solution

**14.** Krebs cycle starts with the formation of six carbon compound by reaction between

A. Malic acid any acetyl CoA

B. Succinic acid and pyruvic acid

C. Fumaric acid and pyruvic acid

D. Oxalo-acetic acid and acetyl CoA.

**Answer: C**

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**15.** Enzymes taking part in glycolysis are present in

A. Mitochondria

B. Cytoplasm

C. Both mitochondria and cytoplasm

D. Vacuole.

**Answer: B**

Watch Video Solution

**16.** Which of the following process is used in the conversion of pyruvate to acetyl CoA ?

A. oxidative decarboxylation

B. Oxidative decarboxylation

C. Oxidative dehydration

D. Oxidative phosphorylation.

**Answer: A**

Watch Video Solution

**17.** Common immediate source of energy in celluar activity is

A. DNA

B. ATP

C. RNA

D. NAD

**Answer: B**

Watch Video Solution

**18.** Net gain of ATP in glycolysis

A. 6

B. 2

C. 4

D. 8

**Answer: D**

Watch Video Solution

**19.** The net gain of energy from one gram mole of glucose during aerobic respiration is

A. 2 ATP

B. 4 ATP

C. 38 ATP

D. 40 ATP

**Answer: C**

Watch Video Solution

**20.** Both respiration and photosynthesis require

A. Sunlight

B. Chlorophyll

C. Glucose

D. Cytochromes.

**Answer: D**

Watch Video Solution

**21.** Respiration can occur in the absence of oxygen in

A. Salanum tuberosum

B. Spirogyra

C. Yeast

D. Homo sapiens

**Answer: C**

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**22.** In respiration pyruvic acid is

A. Formed only when oxygen is available

B. One of the products of Krebs cycle

C. Broken down into a two carbon fragment and $CO_2$

D. A result of protein breakdown

**Answer: C**

Watch Video Solution

**23.** Complete oxidation of one gram mol. Of glucose gives rise to

A. 6860,000 cal

B. 686,000 cal

C. 68,600 cal

D. 6,860 cal

**Answer: B**

Watch Video Solution

**24.** Maximum amount of energy/ATP is liberated on oxidation of

A. $\beta$-amino acid

B. Malic acid

C. Palmitic acid

D. Glucose

**Answer: C**

Watch Video Solution

**25.** In glycolysis ultimately (or end product of glycolysis is)

A. Protein is converted into glucose

B. Glucose is converted into glycogen

C. Starch is converted into glucose

D. Glucose is converted into pyruvic acid.

**Answer: D**

Watch Video Solution

**26.** Carbon dioxide is liberated during

A. Photosynthesis

B. Respiration

C. Transpiration

D. Ascent of sap.

**Answer: B**

Watch Video Solution

**27.** In Krebs cycle

A. Pyruvic acid is converted into $CO_2$ and $H_2O$

B. ADP is Converted into ATP

C. Glucose is converted into $CO_2$

D. Pyruvic acid is converted into ATP.

**Answer: A**

Watch Video Solution

**28.** Raw material of respiration is

A. Glucose and fructose

B. Glucose and sucrose

C. $Glu\cos e + O_2$

D. $Glu\cos e + CO_2$

**Answer: C**

Watch Video Solution

**29.** in the process of repiration in plants 180 gms of sugar plus 192 gms of oxygen produce

A. 132 g of $CO_2$, 54, g of water and 343 Col. Energy

B. 264 g of $CO_2$, 108 g of water and 686 Cal. Of energy

C. 528 g of $CO_2$, 216 g for water and 1372 Cal. Of energy

D. Large amount of $CO_2$, no water and no energy.

**Answer: B**

Watch Video Solution

**30.** What is the total gain of energy during anaerobic respiration

A. Two ATP

B. One ATP

C. Four ATP

D. Three ATP

**Answer: A**

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**31.** Respiration differs from combustion in

A. Liberating more energy as compared to combustion

B. Liberating of all the energy at once in contrast to combustion

C. Liberation of energy gradually in steps in contrast to combustion

D. Carbohydrates take part as the combustion substance

**Answer: C**

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**32.** In mitochondria, ATP synthesis occurs

A. At the outer membrane

B. At the cristae

C. In the matrix

D. In the intra-cristal space.

**Answer: B**

Watch Video Solution

**33.** Final electron acceptor in respiration is

A. Hydrogen

B. Oxygen

C. Cytochromes

D. Dehydrogenases.

**Answer: B**

Watch Video Solution

**34.** Oxidative phosphorylation is found in

A. Chloroplasts

B. Leucoplasts

C. Peroxisomes

D. Mitochondria

**Answer: D**

Watch Video Solution

**35.** In opuntia, in night the R.Q. will be

A. One

B. More than one

C. Zero

D. Mitochondria.

**Answer: C**

Watch Video Solution

**36.** R.Q. is less than one when the respiratory substrate is

A. Sucrose

B. Fat

C. Glucose

D. Less than one

**Answer: B**

Watch Video Solution

**37.** Link between glycolysis, Krebs cycle and $\beta$-oxidation of fatty acid or carbohydrate and fat metabolism is

A. Oxaloacetic acid

B. Succinic acid

C. Citric acid,

D. Acetyl CoA.

**Answer: D**

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**38.** Citric acid cycle is the alternate name of

A. HMP shunt

B. Glycolysis

C. TCA cycle

D. Calvin cycle

**Answer: C**

Watch Video Solution

39. Which is key intermediate compound linking glycolysis to Krebs cycle ?

A. Malic acid

B. Acetyl CoA

C. NADH

D. ATP.

**Answer: B**

Watch Video Solution

**40.** Common phase between aerobic and anaerobic modes of respiration is

A. Krebs cycle

B. EMP/glycolysis

C. Oxidative phosphorylation

D. PPP.

**Answer: B**

Watch Video Solution

**41.** R.Q. of protein rich pulses/Pisum sativum is

A. Unity

B. Infinity

C. More than unity

D. Less than one

**Answer: D**

Watch Video Solution

**42.** Number of ATP molecules which can be built on complete oxidation of pyruvic acid is

A. 6

B. 2

C. 15

D. 30

**Answer: C**

Watch Video Solution

**43.** Oxidation of a molecule of acetyl CoA produces

A. 12 ATP

B. 15 ATP

C. 6 ATP

D. 19 ATP

**Answer: A**

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**44.** In germinating castor seeds, the R.Q. is

or

A mixture containing equal quantity of germinating maize and groundnut seeds are taken. The RQ of this mixture would be

A. Less than one

B. More than one

C. One

D. Zero

**Answer: A**

Watch Video Solution

**45.** Maximum amount of energy/ATP is liberated on oxidation of

A. Fats

B. Proteins

C. Starch

D. Vitamins

**Answer: A**

Watch Video Solution

**46.** End product of glycolysis is

A. Acetyl CoA

B. Pyruvic Acid

C. Glucose 1-phosphate

D. Fructose 1-phosphate

**Answer: B**

Watch Video Solution

**47.** In hexose monophosphate shunt, number of molecules of carbon dioxide evolved is

A. Less than glycolysis

B. Much less than glycolysis

C. More than glycolysis

D. Same as glycolysis

**Answer: C**

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**48.** Both ATP and $Mg^2$ are involved in the activity of

A. Pyruvic Kinase

B. Glucokinase

C. Phosphogluco isomerase

D. PGA dehydrogenase

**Answer: B**

Watch Video Solution

**49.** R.Q. is ratio of

A. $CO_2$ produced to sbstrate consumed

B. $CO_2$ produced to $O_2$ consumed

C. Oxygen consumed to water produced

D. Oxygen consumed to $CO_2$ produced.

**Answer: B**

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**50.** Which of the following is formed from phosphorylation ?

A. Fructose 1,6-biphosphate

B. Phosphoglyceric acid

C. PEP

D. Pyruvic acid.

**Answer: A**

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51. The reaction involved in reduction of $NAD^{+}$ is

A. $Glu\cos e \rightarrow Glu\cos e6 - P$

B. $Fruc \rightarrow se1, 6 - diphosp\hat{e} \rightarrow PGAL + DiHAP$

C. $Glu\cos e6 - P \rightarrow Fruc \rightarrow se6 - P$

D. $PGAL \rightarrow PGA.$

**Answer: D**

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52. In succulents, respiratory quotient is less than one due to

A. Incomplete oxidation

B. Incomplete reduction

C. Complete reduction

D. Complete oxidation

**Answer: A**

Watch Video Solution

**53.** End product of fermentation of sugars is

A. Water and carbon dioxide

B. Alcohol and carbon dioxide

C. Carbon dioxide

D. Alcohol.

**Answer: B**

Watch Video Solution

**54.** End product of aerobic respiration are

A. Sugar and oxygen

B. Water and energy

C. Carbon dioxide, water and energy

D. Carbon dioxide and energy.

**Answer: C**

Watch Video Solution

**55.** First reduction in pentose phosphate pathway is

A. Oxidation of 6-phosphogluconate

B. Oxidation of fructose 6-phosphate

C. Oxidation of glucose 6-phosphate

D. Oxidation of fructose 5-phosphate.

**Answer: C**

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**56.** Succinate is oxidised to fumarate in Krebs cycle by

A. Removal of hydrogen

B. Loss of electrons

C. Addition of oxygen

D. Removal of oxygen

**Answer: A**

Watch Video Solution

**57.** Sequence of organic acids in Krebs cycle is

A. $\alpha - Ke \rightarrow glutaricacid \rightarrow Isocitricacid \rightarrow Oxalo \succ \in icacid$

B. $Isocitricacid \rightarrow Oxalo \succ \in icacid \rightarrow \alpha - Ke \rightarrow glutaricacid$

C. $Isocitricacid \rightarrow \alpha - Ke \rightarrow glutaricacid \rightarrow Oxalo \succ \in icacid$

D. $Oxalo \succ \in icacid \rightarrow Isocitricacid \rightarrow \alpha - Ke \rightarrow glutaricacid.$

**Answer: B**

Watch Video Solution

**58.** Connecting link betwee glycolysis and Krebs cycle is/before entering Krebs cycle pyruvate is changed to

A. Oxaloacetate

B. PEP

C. Pyruvate

D. Acetyl CoA.

**Answer: D**

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**59.** If the temperature is increased (above $35^\circ C$)

A. Rate of photosynthesis will decline earlier than that of respiration

B. Rate of respiration will decline earlier than that of photosynthesis

C. There is no fixed pattern

D. Both decline simultaneously.

**Answer: A**

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60. Oxidative phosphorylation is production of

A. ATP in photosynthesis

B. NADH in photosynthesis

C. ATP in respiration

D. NADH in respiration

**Answer: C**

Watch Video Solution

**61.** When one glucose molecule is completely oxidised, it changes

A. 36 ADP molecules into 36 ATP molecules

B. 38 ADP molecules into 38 ATP molecules

C. 30 ADP molecules into 30 ATP molecules

D. 32 ADP molecules into 32 ATP molecules.

**Answer: B**

Watch Video Solution

**62.** Apparatus to measure rate of respiration and R.Q. is

A. Auxanometer

B. Potemeter

C. Respirometer

D. Manometer

**Answer: C**

Watch Video Solution

**63.** Pyruvic acid is formed at the end of

A. Calvin cycle

B. Glycolysis

C. Krebs cycle

D. Pentose phosphate way.

**Answer: B**

Watch Video Solution

**64.** Out of 36 ATP molecules produced per glucose molecule during respiration

A. 2 are produced outside glycolysis and 34 during respiratory chain

B. 2 are produced outside mitochondira and 34 inside mitochondira

C. 2 during glycolysis and 34 during Krebs cycle

D. All are formed inside mitochondria.

**Answer: B**

Watch Video Solution

**65.** NADH of glycolysis reacts with an inorganic element during libertaion of energy. The respiration is

A. Photorespiration

B. Fermentation

C. Aerobic respiration

D. Anaerobic respiration.

**Answer: C**

Watch Video Solution

**66.** R.Q. of respiratory substrate $C_{99}H_{72}O_6$ would be

A. 0.718

B. 1.34

C. 2.71

D. 3.25

**Answer: A**

Watch Video Solution

**67.** Terminal cytochrome of respiratory chain which donates electrons to oxygen is

A. Cyt. B

B. Cyt. C

C. $Cyt. A_1$

D. $Cyt. A_3$

**Answer: D**

Watch Video Solution

**68.** R.Q. can vary due to

A. Temperature

B. Respiratory substrate

C. Light and oxygen

D. Respiratory product.

**Answer: B**

Watch Video Solution

**69.** R.Q. is maximum when respiratory substrate is

A. Glucose

B. Fat

C. Protein

D. Malic acid.

**Answer: D**

Watch Video Solution

**70.** Number of carbons in pyruvic acid is

A. 6

B. 3

C. 2

D. 1

**Answer: B**

Watch Video Solution

**71.** Metabolic water is the one

A. Used during transamination

B. Used during photosynthesis

C. Produced during aerboic utilisation of glucose

D. Produced during condensation or polymerisation.

**Answer: C**

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**72.** Fumarase changes fumaric acid into

A. Malic acid

B. Maleic acid

C. Citric acid,

D. Succinic acid.

**Answer: A**

Watch Video Solution

**73.** Enzyme helping in oxidatvie decarboxylation of pyruvic acid is

A. Pyruvic Kinase

B. Pyruvic dehydrogenase

C. Malate dehydrogenase

D. Succinic dehydrogenase.

**Answer: B**

Watch Video Solution

**74.** End product of citric acid/Krebs' cycle is

A. Citric acid

B. Lactic acid

C. Pyruvic acid

D. $CO_2 + H_2O$

**Answer: D**

Watch Video Solution

**75.** Respiration is

A. Anabolic process

B. Physical process

C. Catabolic process

D. Biophysical process.

**Answer: C**

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**76.** Out of 38 ATP molecules per glucose, 30 ATP molecules are formed from $NADH / FADH_2$ in

A. Respiratory chain

B. Krebs cycle

C. Oxidative decarboxylation

D. EMP.

**Answer: A**

Watch Video Solution

**77.** As compared to anaerobic respiration, the energy gained during aerobic respiration is

A. 8 times

B. 12 times

C. 19 times

D. 36 times

**Answer: C**

Watch Video Solution

**78.** In germinating seed, R.Q. falls when there is shift from

A. Carbonydrate to fat as substrate

B. Fat to carbohydrate

C. Aerobic to anaerobic respiration

D. Protein to carbohydrate.

**Answer: A**

Watch Video Solution

**79.** Life without air would be

A. Reductional

B. Free from oxidative damage

C. Impossible

D. Anaerobic.

**Answer: D**

Watch Video Solution

**80.** Glycolysis is part of

A. Only anaerobic respiration

B. Krebs cycle

C. Only aerobic respiration

D. Both aerobic and anaerobic respiration.

**Answer: D**

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**81.** Krebs cycle is

A. Oxidation of glucose to alcohol and water

B. Oxidation of acetyl CoA to carbon dioxide and water involving electron transport

C. Complete oxidation of acetyl CoA without electron transport

D. Complete reduction of acetyl CoA to carbon doxide and water.

**Answer: C**

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82. Hydrogen released from substrate by dehydrogenase rquires from substrate by dehydrogenase requires one of the following before reducing coenzyme NAD

A. Electrons

B. Protons

C. Photons

D. Both B and C

**Answer: A**

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83. Which of the substrate is used in protoplasmic respiration

A. Carbohydrate

B. Protein

C. Fat

D. Organic acids.

**Answer: B**

Watch Video Solution

**84.** NAD of Krebs cycle functions as

A. Acceptor of hydrogen ion and electrons

B. Oxygen acceptor

C. Oxygen donor

D. Donor of phosphate ions.

**Answer: A**

Watch Video Solution

**85.** Number of NADH produced during breakdown of one molecule of glucose to 1 : 3 diphosphoglycerate stage is

A. 6

B. 4

C. 3

D. 2

**Answer: D**

Watch Video Solution

**86.** ATP is injected in cyanide poisoning because it is

A. Necessary for cellular functions

B. Necessary for $Na^{+} - K^{+}$ pump

C. $Na^{+} - K^{+}$ pump operates at the cell membranes

D. ATP breaks down cyanide.

**Answer: A**

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**87.** Fermentation products of Yeast are

A. $H_2O + CO_2$

B. Methyl alcohol $+ CO_2$

C. Methyl alcohol + Water

D. Ethyl alcohol $+ CO_2$

**Answer: D**

Watch Video Solution

**88.** Glycolysis is

A. $C_6H_{12}O_6 + 6O_2 \rightarrow 6CO_2 + 6H_2O$

B. $C_6H_{12}O_6 \rightarrow 2C_2H_5OH + 2CO_2$

C. $C_6H_{12}O_6 \rightarrow 2C_3H_4O_3 + 4H^+$

D. $C_3H_4O_3 + NADH \rightarrow C_2H_5OH + CO_2 + NAD^+$

**Answer: C**

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**89.** Biological oxidation in Kreb's cycle involves

A. $N_2$

B. $O_2$

C. $SO_2$

D. $CO_2$.

**Answer: B**

Watch Video Solution

**90.** Oxidative phosphorylation occurs during the process of

A. Transpiration

B. Respiration

C. Protein synthesis

D. Nitrogen metabolism.

**Answer: B**

Watch Video Solution

**91.** Mitochondria supply most of the necessary biological energy be

A. Breaking of proteins

B. Reduction of $NADP^+$

C. Breaking of sugars

D. Oxidising TCA substrates.

**Answer: D**

Watch Video Solution

**92.** Cytochromes are

A. Electron acceptors

B. Protein acceptors

C. Oxygen acceptors

D. Passage way for carbohydrates.

**Answer: A**

Watch Video Solution

**93.** The respiratory substrate yielding maximum number of ATP molecules among the following is

A. Ketogenic amino acids

B. Glucose

C. Amylose

D. Glycogen

**Answer: B**

Watch Video Solution

**94.** Glycolysis and TCA cycle operate respectively in

A. Cytosol and matrix of mitochondrion

B. Cytosol and stroma of chloroplast

C. Cytosol and oxysomes of mitochondrion

D. Matrix of mitochondrion and inner membrane of mitochondrion.

**Answer: A**

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**95.** Which component of ETC is not a protein ?

A. Cytochrome

B. Ubiquinone

C. Cytochrome oxidase

D. All the above

**Answer: B**

Watch Video Solution

**96.** Pyruvic acid is a product of

A. Acetic acid

B. Acetyl CoA

C. Starch

D. Glucose.

**Answer: D**

Watch Video Solution

**97.** Which one is a product of glycolysis, besides 2 ATP ?

A. FAD

B. NADH

C. NAD

D. NADP.

**Answer: B**

Watch Video Solution

**98.** Conversion of ATP to ADP releases

A. Energy

B. Enzyme

C. Hormone

D. Electricity.

**Answer: A**

Watch Video Solution

**99.** The site Krebs cycle in bacteria is

A. Nucleoid

B. Cytoplasm

C. Plasma membrane

D. Ribosomes

**Answer: C**

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**100.** Oxidation of glucose to $CO_2$ and water occurs during

A. Glycolysis

B. Pentose phosphate pathway

C. Krebs cycle

D. All the above

**Answer: B**

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**101.** Oxidation of pyruvate to $CO_2$ and $H_2O$ occurs through

A. Citric acid cycle

B. Tricarboxylic acid

C. Krebs cycle

D. All the above

**Answer: D**

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**102.** The first phase in the breakdown of glucose in animal cell is

A. Krebs cycle

B. Glycolysis

C. Oxidative phosphorylation

D. E.T.C.

**Answer: B**

Watch Video Solution

**103.** R.Q. of malic acid is

A. 1.3

B. 4

C. 0.7

D. 1

**Answer: A**

Watch Video Solution

**104.** Enzymes of oxidative phosphorylation occur in

A. Endoplasmic reticulum

B. Chloroplasts

C. Mitochondria

D. Golgi apparatus.

**Answer: C**

Watch Video Solution

**105.** Which one is product of aerobic respiration

A. Malic acid

B. Ethyl alcohol

C. Lactic acid

D. Pyruvic acid.

**Answer: A**

Watch Video Solution

**106.** For two molecules of glucose, glycolysis uses and produces ATP molecules

A. 4 and 8

B. 2 and 4

C. 2 and 8

D. 2 and 2

**Answer: A**

Watch Video Solution

**107.** Krebs cycle is component of

A. Photosynthesis

B. Aerobic respiration

C. Anaerobic respiration

D. Photorespiration

**Answer: B**

Watch Video Solution

**108.** Fructose 1 : 6 biphosphate splits into two triose phosphates by enzyme

A. Aldolase

B. Amylase

C. Zymase

D. Lipase.

**Answer: A**

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**109.** Mitochondria are store houses of

A. Glycogen

B. Glucose

C. ATP

D. Fats.

**Answer: C**

Watch Video Solution

**110.** Respiration is

A. Catabolic process that uses carbon dioxide, produces oxygen and converts released energy to ATP

B. Anabolic process that uses oxygen and carbon dioxide to form ATP

C. Anabolic process that uses oxygen, produces carbon dioxide and converts released energy into ATP

D. Catabolic process that uses oxygen, produces carbon dioxide and converts released energy into ATP.

**Answer: D**

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**111.** Hydrogen atoms released at succinate level in Krebs cycle are accepted by

A. NAD

B. FAD

C. NADP

D. ADP

**Answer: B**

Watch Video Solution

**112.** How much usable energy is available during oxidative combustion of 1 gm mole of glucose in the body ?

A. 686000 cal

B. 304000 cal

C. 277400 cal

D. 686 cal.

**Answer: C**

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**113.** Which one yields the maximum energy ?

A. Krebs cycle

B. Anaerobic respiration

C. Glycolysis

D. Aerobic respiration

**Answer: D**

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**114.** Which one can respire in the absence of oxygen ?

A. Seeds

B. Leaves

C. Stem

D. Root.

**Answer: A**

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**115.** In glycolysis, glucose splits into compounds which are

A. 5-C

B. 4-C

C. 5-C

D. 3-C

**Answer: D**

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116. Krebs cycle is

A. Aerobic

B. Anaerobic

C. Anabolic

D. None of the above

**Answer: A**

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117. The end product of oxidative phosphorylation is

A. ATP

B. $ATP + H_2O$

C. NADH

D. Oxygen

**Answer: B**

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**118.** R.Q. of 4 is obtained when respiratory substrate is

A. Oxalic acid

B. Malic acid

C. Tartaric acid

D. Glucose.

**Answer: A**

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**119.** Mitochondrial matrix has enzymes for

A. Krebs cycle

B. TCA cycle and electron transport

C. Glycolysis and TCA cycle

D. Both B and C

**Answer: A**

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**120.** ETC and TCA enzymes occur in

A. Ribosomes

B. Endoplasmic reticulum

C. Mitochondria

D. Cytoplasm and nucleus.

**Answer: C**

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**121.** In case NADH is oxidised in a single step to from water

A. Cell will burn

B. Most of energy is liberated as heat

C. 3 ATP are formed

D. 5 ATP are formed.

**Answer: B**

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**122.** What is produced when succinyl CoA is changed to succinate ?

A. ATP

B. GTP

C. CTP

D. ATP in plants and GTP in animals.

**Answer: D**

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**123.** Krebs cycle forms an important product

A. Acetyl CoA

B. ADP

C. ATP

D. Water.

**Answer: C**

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**124.** Fermentation produces

A. Protein and acetic acid

B. alcohol and lipoprotein

C. alcohol, lactic acid, etc.

D. Ethers and acetones.

**Answer: C**

Watch Video Solution

**125.** Lactic acid fermentation does not produce

A. ATP

B. $CO_2$ and $NADH$

C. $CO_2$

D. NADH

**Answer: B**

Watch Video Solution

**126.** Iron-prophyrin protein complex occurs in

A. Cytochrome

B. Chlorophyll

C. Phytochrome

D. Both A and B

**Answer: A**

Watch Video Solution

**127.** Number of ATP produced from one pyruvic acid during conversion to acetyl CoA is

A. 3

B. 5

C. 8

D. 15

**Answer: A**

Watch Video Solution

**128.** NADH is produced in

A. Photosystem II

B. Photosystem I

C. Glycolysis

D. Both A and B

**Answer: C**

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**129.** The correct sequences of electron acceptor in ATP synthesis is

A. Cyt $a, a_3, b, c$

B. Cyt $b, c, a, a_3$

C. Cyt $c, b, a, a_3$

D. Cyt $b, c, a_3, a.$

**Answer: B**

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**130.** Anaerobic process after glycolysis is known as

A. TCA cycle

B. Krebs cycle

C. Calvin cycle

D. None of the above

**Answer: D**

Watch Video Solution

**131.** Electron transport sytem in mitochondria is located in

A. Outer membrane

B. Inner membrane

C. Inter-cristal space

D. Outer chamber.

**Answer: B**

Watch Video Solution

**132.** Protein is respiratory substrate in

A. Seeding state

B. Anaerobic respiration

C. Protoplasmic respiration

D. Floating respiration.

**Answer: C**

Watch Video Solution

**133.** Number of Oxygen atoms required for complete oxidation of pyruvic acid is

A. 6

B. 12

C. 3

D. 8

**Answer: A**

Watch Video Solution

**134.** FAD participates in Krebs' cycle as electron acceptor during conversion of

A. $\alpha - \text{Ketoglutarate} \rightarrow \text{Succinyl} \quad CoA$

B. $\text{Succinic acid} \rightarrow \text{Furmaric acid}$

C. $\text{Succinyl CoA} \rightarrow \text{Succinic acid}$

D. $\text{Fumaric acid} \rightarrow \text{Malic acid.}$

**Answer: B**

Watch Video Solution

**135.** $ADP \rightarrow ATP \rightarrow ADP$ system was found by Lipmann in

A. 1940

B. 1950

C. 1960

D. 1970

**Answer: A**

Watch Video Solution

**136.** $\alpha$-Ketoglutarate dehydrogenase brings about

A. Oxidation and decarboxylation

B. Oxidation

C. Decarboxylation

D. Reduction.

**Answer: A**

Watch Video Solution

**137.** Fructose 6-phosphate is changed to fructose 1,6-diphosphate by

A. Phosphoglycerate

B. Phosphatase

C. Phosphofructo-kinase

D. Enolase.

**Answer: C**

Watch Video Solution

**138.** Which theory explains ATP synthesis in chloroplasts and mitochondira ?

A. Lipman and Lohmann theory

B. Lock and key theory of Fischer

C. Induced fit theory of Fischer

D. Chemi-osmotic theory of Mithell.

**Answer: D**

Watch Video Solution

**139.** In bacteria the site for respiratory activity is found in

A. Cytoplasm

B. Mesosome

C. Episome

D. Plasmid.

**Answer: B**

Watch Video Solution

**140.** Krebs' cycle starts with the formation of a six carbon compound by reaction between

A. OAA+Acetyl CoA

B. Citric acid + Acetyl CoA

C. OAA + Pyruvic acid

D. OAA + Citric acid.

**Answer: A**

Watch Video Solution

**141.** Substrate phosphorylation occurs during

A. $\text{Fumaric acid} \rightarrow \text{Malic acid}$

B. $\text{Oxalosuccinic acid} \rightarrow \alpha - \text{Ketoglutaric acid}$

C. $\text{Succinic acid} \rightarrow \text{Fumaric acid}$

D. $\alpha - \text{Ketoglutaric acid} \rightarrow \text{Succinic acid.}$

**Answer: D**

Watch Video Solution

**142.** Which one is absent in erythrocytes ?

A. Krebs cycle

B. Enzymes

C. Biomembrane

D. Hyaloplasm.

**Answer: A**

Watch Video Solution

**143.** Production of alcohol by Yeast fermentation is .... Process

A. Anaerobic

B. Aerobic

C. Light dependent

D. Both A and C.

**Answer: A**

Watch Video Solution

**144.** Differences between photophosphorylation (PP) and oxidative phosphorylation (OP) is

A. In PP, synthesis is of ATP while in OP it is of ADP

B. In PP, oxygen is evolved while in OP oxygen is taken up

C. Both cannot take place in light

D. PP can take place in green leaves while OP cannot occur in green leaves.

**Answer: B**

Watch Video Solution

**145.** Conversion of sugar into alcohol during fermentation is due

A. Temperature

B. Concentration of sugar

C. Zymase

D. Microorganisms.

**Answer: C**

Watch Video Solution

**146.** Cofactor required for formation of acetyl CoA is

A. TPP

B. Lipoic acid

C. $Mg^{2+}, CoA$

D. All the above

**Answer: D**

Watch Video Solution

**147.** R.Q. for organic acid is

A. 1

B. $> 1$

C. $< 1$

D. $0$.

**Answer: B**

Watch Video Solution

**148.** Before entering respiratory pathway. Amino acid are

A. Decarboxylated

B. Hydrolysed

C. Deaminated

D. Phosphorylated.

**Answer: C**

Watch Video Solution

**149.** Energy required to form glucose from pyruvate is equivalent to

A. 32 ATP

B. 16 ATP

C. 8 ATP

D. 4 ATP.

**Answer: C**

Watch Video Solution

**150.** General formula for aerobic respiration is

A. $6CO_2 + 6H_2O \rightarrow C_6H_{12}O_6 + 6O_2$

B. $C_6H_{12}O_6 + 6O_2 \rightarrow 6CO_2 + 6H_2O + 686kcal$

C. $C_6H_{12}O_6 \rightarrow 2C_2H_5OH + 2CO_2 + 2ATP$

D. $C_6H_2O_6 \rightarrow 2C_3H_6O_3 + 2ATP.$

**Answer: B**

Watch Video Solution

**151.** Which of the following enzymes is absent in mitochondria

A. Aconitase

B. Malic dehydrogenase

C. Fumarase

D. Hexokinase.

**Answer: D**

Watch Video Solution

**152.** Excess of ATP inhibits respiration by inhibiting one of the following enzymes

A. Phosphofructokinase

B. Hexokinase

C. Pyruvic decarboxylase

D. Aldolase.

**Answer: A**

Watch Video Solution

**153.** Anaerobic respiration of animals/humans produces

A. $Glu\cos e$ and $O_2$

B. $C_2H_5OH$ and $CO_2$

C. Lactic acid and water

D. $CO_2$ and $H_2O$

**Answer: C**

Watch Video Solution

**154.** Number of carbon atoms available in acetyl CoA is

A. 6

B. 4

C. 3

D. 2

**Answer: D**

Watch Video Solution

**155.** Match the contents of column I with that of column II and choose the correct option.

| | | | |
|---|---|---|---|
| a | $H^+, OH^-$ | p | Glycolysis |
| b | Pyruvic acid | q | Alcoholic fermentation |
| c | $C_2H_5OH, CO_2$ | r | Chemosynthesis |
| | | s | Photolysis of water |

A. a-s, b-q, c-p

B. a-s, b-r, c-p

C. a-s, b-p,c-q

D. a-s,b-r,c-q

**Answer: C**

Watch Video Solution

**156.** In glycolysis, enzyme enolase produces

A. Phosphoglyceric acid

B. Phosphoenol pyruvate

C. Phosphoglyceraldehyde

D. Pyruvate.

**Answer: B**

Watch Video Solution

**157.** Which product of glycolysis is consumed in alcoholic fermentaion ?

A. $NADH_2$

B. ATP

C. $ATP \text{ and } NADH_2$

D. $CO_2$.

**Answer: A**

Watch Video Solution

**158.** The number of ATP molecules produced by electron transport system from Krebs cycle intermediates in a single trun is

A. 11

B. 12

C. 14

D. 16

**Answer: A**

Watch Video Solution

**159.** Electron transport requires

A. Cytochromes

B. Phytochrome

C. Enzymes

D. Hormones.

**Answer: A**

Watch Video Solution

**160.** Site of glycolysis/EMP is

A. Chloroplasts

B. Chromosome

C. Cytoplasm

D. Nucleus.

**Answer: C**

Watch Video Solution

**161.** Maximum energy becomes available per mole of glucose when it is metabolised through

A. Glycolysis in skeletal muscle of a sprinter

B. Fermentation into ethanol by yeast

C. Fermentation into methanol by eneteric bacteria

D. Aerobic respiration

**Answer: D**

Watch Video Solution

**162.** Enzyme pair common to both EMP and $C_3$ cycle is

A. Aldolase and enolase

B. Aldolase and triose phosphate isomerase

C. Phosphoglyceromutase and triose phosphate isomerase

D. Cytochrome oxidase and enolase.

**Answer: B**

Watch Video Solution

**163.** Total number of ATP molecules produced per glucose molecule in eucaryotic cell is

A. 38

B. 36

C. 24

D. 12

**Answer: B**

Watch Video Solution

**164.** Energy required to synthesise ATP from ADP and inorganic phosphate is

A. 2500 cal

B. 7600 cal

C. 12000 cal

D. 20000 cal.

**Answer: B**

Watch Video Solution

**165.** Anaerobic respiration of yeast produces

A. $N_2$

B. $O_2$

C. $CO_2$

D. $H_2O$.

**Answer: C**

Watch Video Solution

**166.** Which can readily respire without oxygen ?

A. Anabaena

B. Saccharomyces

C. Mushroom

D. Fish.

**Answer: B**

Watch Video Solution

**167.** Green plants kept in light produce ATP from glucose. The process is

A. Photophosphorylation

B. Glycolysis

C. TCA cycle

D. Oxidativ phosphorylation.

**Answer: D**

Watch Video Solution

**168.** R.Q is more than one in case of

A. Fat

B. Glucose

C. Organic acid

D. Protein.

**Answer: C**

Watch Video Solution

**169.** Alcoholic fermentation is carried out by

A. Saccharomyces

B. Lactobacillus

C. Clostridrium

D. Aspergillus.

**Answer: A**

Watch Video Solution

**170.** One $NADH_2 / NADPH_2$ yields

A. 2 ATP

B. 3 ATP

C. 12 ATP

D. 6 ATP

**Answer: B**

Watch Video Solution

**171.** Which one froms ATP ?

A. Fe and P

B. N and P

C. Fe and Mo

D. Mg and Mn

**Answer: B**

Watch Video Solution

**172.** Metabolism of one plamitic acid yields ATP

A. 36 ATP

B. 56 ATP

C. 129 ATP

D. 48 ATP

**Answer: C**

Watch Video Solution

**173.** Energy for ATP synthesis is obtained from

A. Oxygen ion gradient

B. Hydrogen ion gradient

C. Nitrogen ion gradient

D. All the above

**Answer: B**

Watch Video Solution

**174.** Energy released in aerobic respiration is higher than the one available from anaerobic respiration by

A. 8 times

B. 18 times

C. 28 times

D. 36 times.

**Answer: B**

Watch Video Solution

**175.** Enzymes located in mitochondrial membrane are

A. Enolase and catalase

B. Flavoproteins and cytochromes

C. Hexokinase and zymase

D. Citrate synthetase and glutamate dehydrogenase.

**Answer: B**

Watch Video Solution

**176.** Mitochondiral marker enzyme is

A. Pyruvate dehydrogenase

B. Aldolase

C. Amylase

D. Succinic dehydrogenase.

**Answer: D**

Watch Video Solution

**177.** Oxygen is reduced to water in

A. Fermentation

B. Calvin cycle

C. Electron transport

D. Krebs cycle

**Answer: C**

Watch Video Solution

**178.** Oxidative phosphorylation occurs during the process of

A. Photosynthesis

B. Protein synthesis

C. Respiration

D. Lipid syntehsis

**Answer: C**

Watch Video Solution

**179.** Products of anaerobic respiration are

A. Ethyl alcohol and carbon monoxide

B. Ethyl alcohol and lactic acid

C. Lactic acid and glycogen

D. Acetic acid and carbon dioxide.

**Answer: B**

Watch Video Solution

**180.** Pyruvic acid, the last product of glycolysis, is degraded to $CO_2$ and $H_2$

A. Cytoplasm

B. Inner membrane of mitochondira

C. Matrix of mitochondira

D. Matrix of chlorolasts.

**Answer: C**

Watch Video Solution

**181.** Cyanide resistant respiration is found in

A. Plants

B. Bacteria

C. Viruses

D. Animals.

**Answer: A**

Watch Video Solution

**182.** Component of ETC of mitochondira is

A. Carotenoids

B. Plastocyanin

C. Phytochrome

D. Cytochrome oxidase.

**Answer: B**

Watch Video Solution

**183.** Iron porphyrin occurs in

A. Anthocyanin

B. Phytochrome

C. Cytoplasm

D. FAD.

**Answer: C**

Watch Video Solution

**184.** A sudden change from anaerobic to aerobic process produces

A. Pasteur effect

B. Emerson effect

C. Blackman's law

D. Charagaffs rule.

**Answer: A**

Watch Video Solution

**185.** Bond between first phosphate and adenosine in ATP is

A. Phosphoester bond

B. Nitrophosphate bond

C. Phosphoanhydride bond

D. Adenophosphate bond.

**Answer: A**

Watch Video Solution

**186.** During glycolysis, glucose is first changed to

A. Glucose 6-phosphate

B. Fructose 6-phosphate

C. Glucose 1,6-phosphate

D. Adenophosphate bond.

**Answer: A**

Watch Video Solution

**187.** For their functioning, cytochromes possess

A. Mg

B. Fe

C. Mn

D. Na.

**Answer: B**

Watch Video Solution

**188.** Alcoholic fermentation uses

A. Ribosomes

B. Golgi bodies

C. Mitochondrial enzymes

D. Cytoplasmic enzymes.

**Answer: D**

Watch Video Solution

**189.** Sequence of organic acids in Krebs cycle is

A. Citric acid $\rightarrow$ oxalosuccinic acid $\rightarrow$ isocitric acid

B. Citric acid $\rightarrow$ isocitric acid $\rightarrow$ oxalosuccinic acid

C. Isocitric acid $\rightarrow$ oxalosuccinic acid $\rightarrow$ citric acid

D. Oxalosuccinic acd $\rightarrow$ isocitric acId $\rightarrow$ citric acid.

**Answer: B**

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**190.** Coenzyme $NAD^{+}$ and $FAD$ are connected with respiratory reactions as they

A. Are involved in each step of ATP synthesis

B. Function in Krebs cycle and terminal oxidative phosphorylation

C. Act as hydrogen carrier

D. Are reducing agents.

**Answer: C**

Watch Video Solution

**191.** Net/direct gain of ATP molecules formed in glycolysis is

A. 2

B. 4

C. 36

D. 38

**Answer: A**

Watch Video Solution

**192.** Isocitric acid is changed to 2-oxoglutaric acid by

A. Oxidative carboxylation

B. Oxidative decarboxylation

C. Dehydrogentaion

D. Hydrogentaion and decarboxylation.

**Answer: B**

Watch Video Solution

**193.** Glyceraldehyde 3-phosphate is oxidised to 1-3 biphosphoglyceric acid alongwith

A. Release of elecrons for reducing $NAD^{+}$

B. ATP synthesis

C. Release of phosphate group

D. Release of $H^{+}$ and $e^{-}$ for forming NADH.

**Answer: D**

Watch Video Solution

**194.** Anaerobic respiration following glycolysis is

A. Oxidative phosphorylation

B. Krebs cycle

C. Fermentation

D. Both A and B.

**Answer: C**

Watch Video Solution

**195.** Select the correct match for the following (a) Net ATP produced in glycolysis (b) Positive Bendedict's test (c) Genes unable to express in presence of their allelas (d) A character controlled by many genes.

A. 36, glucose, recessive, polygenic

B. 8, glucose, recessive, polygenic

C. 32, sucrose, recessive, polygenic

D. 8, fructose, dominant, polygenic.

**Answer: A**

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**196.** A molecule of $FADH_2$

A. Consumes one $O_2$

B. Consumes one $H_2O$ molecule

C. Forms 2ATP

D. All the above

**Answer: C**

Watch Video Solution

**197.** Enzymes of Krebs cycle occur in mitocho-ndrial matrix except one which is attached to inner mitochondrial membrane

A. Citrate sysnthetase

B. $\alpha$-keto glutarate dehydrogenase

C. Succinate dehydrogenase

D. Malate dehydrogenase.

**Answer: C**

Watch Video Solution

**198.** RQ is less than one for

A. Carbohydrate

B. Organic acid

C. Starch

D. Protein.

**Answer: D**

Watch Video Solution

**199.** Fermentation is

A. Incomplete oxidation

B. Anaerobic respiration

C. Excretory process

D. None of the above

**Answer: B**

Watch Video Solution

**200.** Glycolysis is conversion of

A. Glucose to glycogen

B. Glycogen to glucose

C. Glucose to glucose

D. Glucose to citric acid.

**Answer: C**

Watch Video Solution

**201.** Anaerobic respiration takes place in

A. Ribosomes

B. Nucleus

C. Vacuole

D. Cytoplasm.

**Answer: D**

Watch Video Solution

**202.** When malic acid is respiratory substrate, the amount of $CO_2$ released is

A. More than $O_2$ consumed

B. Less than $O_2$ released

C. Equal to $O_2$ consumed

D. $CO_2$ is not released.

**Answer: A**

Watch Video Solution

**203.** RQ is more than one indicating

A. Aerobic respiraton

B. Anaerobic respiration

C. Both A and B

D. None of the above

**Answer: C**

Watch Video Solution

**204.** At the end of citric acid cycle most of the energy is transferred to

A. $NADH \text{ and } FADH_2$

B. Oxaloacetic acid

C. Citric acid

D. ATP.

**Answer: A**

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**205.** In aerobic respiration one glucose produces

A. $8NADH + 2FADH_2 + 2ATP$

B. $12NADH + 2FADH_2 + 38ATP$

C. $12NADH + 30ATP + H_2o$

D. $10NADH + 2FADH_2 + 2ATP + 2GTP.$

**Answer: D**

Watch Video Solution

**206.** What occurs in glycolysis

A. Fixation

B. Reduction

C. Dehydrogentaion

D. Oxidation.

**Answer: D**

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**207.** Match the items of column I and II and choose the correct option.

| | Column I | | Column II |
|---|---|---|---|
| a | Krebs cycle | p | Stroma |
| b | Glycolysis | q | Grana |
| c | Calvin cycle | r | Mitochondrial matrix |
| | | s | Cytoplasm |

A. a-s, b-r, c-q

B. a-r, b-s, c-p

C. a-s, b-r, c-p

D. a-r, b-s, c-q.

**Answer: B**

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**208.** RQ of sprouting potato is

A. 1

B. $> 1$

C. $< 1$

D. Zero

**Answer: A**

Watch Video Solution

**209.** What is true of Krebs cycle

A. ATP/GTP is formed

B. Two decarboxylations

C. Acetyl CoA mombines with OAA

D. All the above

**Answer: D**

Watch Video Solution

**210.** In respiration

A. 2 PGAL are formed in glycolysis and none in Krebs cycle

B. 6 PGAL in glycolysis, 3 PGAL in Krebs cycle

C. 8 PGAL in glycolysis, 3 PGAL in Krebs cycle

D. PGAL formation does not occur in respiration.

**Answer: A**

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**211.** Which one is the last electron acceptor over ETC in oxidative phosphorylation

A. $H_2$

B. Cyt$a_3$

C. Cyt b

D. $CO_2$.

**Answer: B**

Watch Video Solution

**212.** Before combining with OAA, pyruvic acid is changed into

A. Succinic acid

B. Malic acid

C. Acetyl CoA

D. Citric acid.

**Answer: C**

Watch Video Solution

**213.** Glycolysis takes place in

A. All cells

B. Only eukaryotic cells

C. Muscle cells

D. Nerve cells.

**Answer: A**

Watch Video Solution

**214.** In which one of the following do the two names refer to one and the same thing

A. Krebs cycle and Calvin cycle

B. Tricarboxylic acid cycle and citric acid cycle

C. Citric acid cycle and Calvin cycle

D. Tricarboxylic acid cycle and urea cycle.

**Answer: B**

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**215.** In alcoholic fermentation

A. Triose phosphate is electron donor while acetaldehyde is electron acceptor

B. Triose phosphate is electron donor while pyruvic acid is electron acceptor

C. There is no electron donor

D. Oxygen is electron acceptor.

**Answer: A**

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**216.** The reaction forming 3-phosphoglyceric acid in glycolysis is

A. Cleavage

B. Oxidative phosphorylation

C. Dephosphorylation

D. Oxidative decarboxylation.

**Answer: C**

Watch Video Solution

**217.** Tick the correct statements

A. Anaerobes grow in absence of oxygen

B. Aerophiles can grow in complete absence of oxygen

C. Aerobes can grow in absence of oxygen

D. Obligate anaerobes can live in the presence of abundant oxygen.

**Answer: A**

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**218.** An enzyme absent in mitochondrial ETS is

A. FeS protease

B. Glucose 6-phosphate dehydrogenase

C. NADH dehydrogenase

D. Cytochrome c-oxidase.

**Answer: B**

Watch Video Solution

**219.** Which is rich in energy

A. $NAD^{+}$

B. Mitochondria

C. FAD

D. ATP.

**Answer: D**

Watch Video Solution

**220.** Mitochondrial electron transport chain is

A. Cyclic phosphorylation

B. Oxidative phosphorylation

C. Noncyclic phosphorylation

D. Photooxidation.

**Answer: B**

Watch Video Solution

**221.** Electron transport system occurs in

A. Outer membrane of mitochondria

B. Cristae of mitochondira

C. Matrix of mitochondira

D. Oxysomes.

**Answer: B**

Watch Video Solution

**222.** Which one requires oxygen

A. Fermentation

B. EMP pathway

C. Pentose phosphate pathway

D. None of the above

**Answer: D**

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**223.** Match and find the correct combination

(a) Respiration in bacteria

(b) Respiration in cyanobacteria

(c) Respiration in eucaryotic cells

(d) Mitochondria

(e) Cytoplasmic membrane

(f) Mesosomes.

A. a-e, b-f, c-d

B. a-f, b-e, c-d

C. a-d, b-f, c-e

D. a-e, b-d, c-f

**Answer: B**

View Text Solution

**224.** Number of oxygen molecules required for glycolytic breakdown of one glucose molecule is

A. 38

B. 36

C. 2

D. Zero

**Answer: D**

Watch Video Solution

**225.** Ethanol is formed from acetaldehyde by an enzyme called

A. Lactate dehyderogenase

B. Pyruvate kinase

C. Alcohol dehydrogenase

D. Pyruvate decarboxylase.

**Answer: C**

Watch Video Solution

**226.** Cell respiration is carried out by

A. Mitochondria

B. Golgi bodies

C. Ribosomes

D. Chloroplasts.

**Answer: A**

Watch Video Solution

**227.** In glycolysis, electrons are removed by

A. ATP

B. NAD

C. Glyceraldehyde 3-phosphate

D. Molecular oxygen.

**Answer: B**

Watch Video Solution

**228.** Mechansim of aerboic respiraton//tricarboxylic acid pathway was disocovered by

A. Calvin

B. Krebs

C. Pasteur

D. Hatch and Slack.

**Answer: B**

Watch Video Solution

**229.** the number of glucose molecules required to produces 38 ATP molecules under anaerobic conditions by a yeast cells is

A. 2

B. 4

C. 19

D. 38

**Answer: C**

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**230.** Pasteur effect can be studied in case of

A. Nostoc

B. Penicillium

C. Pinnularia

D. sacharomyces

**Answer: D**

Watch Video Solution

**231.** Ganong's respiroscope is used to demonstrate...................

A. Heat during respiration

B. $CO_2$ during aerobic respiration

C. $CO_2$ during fermentation

D. `Evolution of oxygen during photosynthesis

**Answer: B**

Watch Video Solution

**232.** Dough kept overnight in warm weather becomes soft and spongy due to

A. Osmosis

B. Absorption of $CO_2$ from atomosphere

C. Cohesion

D. Fermentation

**Answer: D**

Watch Video Solution

**233.** Which of the following is the first step of glycolysis ?

A. Conversion of glucose into fructose

B. Dehydrogenation of glucose

C. Breakdown of glucose

D. Phosphorylation of glucose.

**Answer: D**

Watch Video Solution

**234.** How many ATP molecules are released when one molecules of glucose is oxidised in our liver cells ?

A. 36

B. 38

C. 2

D. 8

**Answer: B**

Watch Video Solution

**235.** Pasteur effect is

A. Stoppage of fermentation in presence of oxygen

B. Increase of fermentation in presence of oxygen

C. Decrease in fermentation in presence of oxygen

D. No effect on fermentation.

**Answer: A**

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**236.** R.Q. of anaerobic respiration is

A. Zero

B. $\infty$

C. 1

D. $> 1$.

**Answer: B**

Watch Video Solution

**237.** Which of the following is an important intermediate formed in all types of respiration ?

A. Acetyl CoA

B. Oxaloacetate

C. Pyruvic acid

D. Tricarboxylic acid.

**Answer: C**

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**238.** Refer the given equation.

$2(C_{51}H_{98}O_6) + 145O_2 \rightarrow 102CO_2 + 98H_2O +$ Energy The RQ in this case is

A. 0.7

B. 1

C. 1.45

D. 1.62.

**Answer: A**

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**239.** Which one of the following is wrong about glycolysis

A. It produces ATP

B. It uses ATP

C. End products are $CO_2$ and $H_2O$

D. None of the above

**Answer: C**

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**240.** During glycolysis the number of ATP molecules utilised to change glucose into fructose 1, 6 diphosphate are

A. 4

B. 3

C. 2

D. 1

**Answer: C**

Watch Video Solution

**241.** Aerobic respiration occurs in

A. Thylakoid

B. Golgi body

C. Grana

D. Mitochondria.

**Answer: D**

Watch Video Solution

**242.** Single trun of citric acid cycle yields

A. $2FADH_2, 2NADH_2, 2GTP$

B. $1FADH_2, 2NADH_2, 1GTP$

C. $1FADH_2, 3NADH_2, 1GTP$

D. $1FADH_2, 4NADH_2, 1GTP$

**Answer: C**

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**243.** In electron transport system (ETS) which of the following cytochromes reacts with oxygen

A. Cyt $a_3$

B. Cyt b

C. Cyt $b_3$

D. Cyt $b_6$

**Answer: A**

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**244.** R.Q. is less than one when the respiratory substrate is

A. Organic acids

B. Fats and proteins

C. Sucrose

D. Glucose.

**Answer: B**

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**245.** Conversion of glucose to glucose-6-phosphate, the first irreversible reaction of glycolysis, is catalyzed by :

A. Hexokinase

B. Isomerase

C. Phosphokinase

D. Phosphohexokinase

**Answer: A**

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**246.** Chemiosmotic theory of ATP synthesis in the chloroplasts and mitochondria is based on

A. Membrane potential

B. Accumulation of $Na^+$ ions

C. Accumulation of $K^{+}$ ions

D. Proton gradient.

**Answer: D**

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**247.** During which stage in the complete oxidation of glucose are the greatest number of ATP molecules formed from ADP

Or

Largest amount of phosphate bond energy is produced in the process of respiration during

A. Glycolysis

B. Krebs cycle

C. Conversion of pyruvic acid to acetyl CoA

D. Electron transport chain.

**Answer: D**

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**248.** Ferrodoxin contains

A. Mg

B. Co

C. Iron

D. Nitrite.

**Answer: C**

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**249.** During night, a person should not sleep under a tree because the tree

A. Releases $O_2$ during night

B. Does not release $CO_2$ during night

C. Releases $CO_2$ during night

D. Releases water during guttation.

**Answer: C**

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**250.** How many ATP molecules could maximally be generated from one molecule of glucose, if the complete oxidation of one mole of glucose to $CO_2$ and $H_2O$ yields 686 kcal and the useful chemical energy available in the high energy phosphate bond of one mole of ATP is 12 kcal

A. 1

B. 2

C. 30

D. 57

**Answer: D**

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**251.** How many ATPs are formed per glucose molecule in Krebs cycle ?

A. 2

B. 24

C. 6

D. 28

**Answer: B**

Watch Video Solution

**252.** How many molecules of NADH are produced when four molecules of phosphoglyceraldehyde are converted into four molecules of pyruvate?

A. 2

B. 6

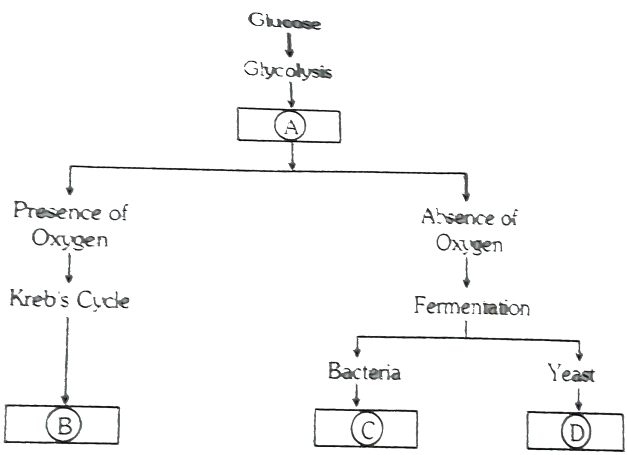
C. 8

D. 4

**Answer: D**

Watch Video Solution

**253.** The following is a simplified scheme showing the fate of glucose during aerobic and annaerobic respiration. Identify the end products that are formed at stages indicated as A,B, C and D. Identify the correct option from those given below.



A.

a-pyruvic acid, $b - CO_2 + H_2O$, C-ethyl alcohol $+ CO_2$, d-lactic acid

B.

a-pyruvic acid, b-ethyl alcohol $+ CO_2$c-lactic acid, $d - CO_2 + H_2O$

C.

$a - CO_2 + H_2O$, b-pyruvic acid, c-ethyl alcohol $+ CO_2$, d-lactic acid

D.

a-pyruvic acid, $b - CO_2 + H_2O$, c-lactic acid, d-ethyl alcohol $+ CO_2$

**Answer: D**

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**254.** Which of the following process makes direct use of oxygen ?

A. Glycolysis

B. Fermentation

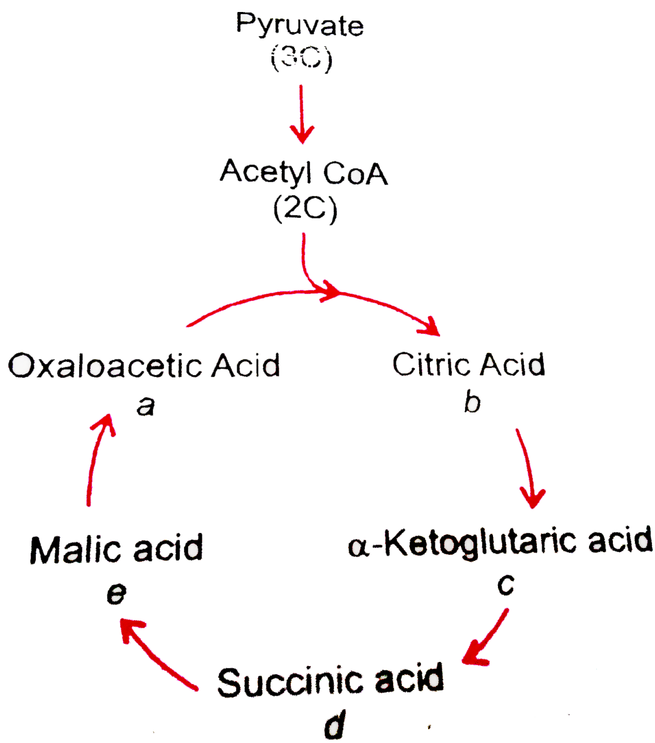
C. Electron transport

D. Krebs citric acid cycle

**Answer: C**

Watch Video Solution

**255.** Choose the correct combination of labelling the number of carbon compounds in the substrate molecules involved in citric acid cycle.



A. a-4C, b-6C, c-5C, d-4C, e-4C

B. a-6C, b-5C, c-4C, d-5C, e-6C

C. a-4C, b-5C, c-6C, d-4C, e-4C

D. a-4C, b-6C, c-4C, d-5C, e-4C

**Answer: A**

View Text Solution

**256.** Which of the following statements is/are not true

A) One ATP molecule yields 32 kJ of energy

B. Pentose Phosphate pathway was discovered by Dickens

C. When tripalmitin is used as a substrate, the R.Q. is 0.7

D. energy released by one molecule of glucose on complete oxidation corresponds to 1292 kJA

A. a, b and d

B. a and b

C. c and d

D. a, c and d

**Answer: B**

Watch Video Solution

**257.** Respiratory quotient (R.Q.) is

A. Volume of $O_2$ evolved//Volume of $CO_2$ consumed

B. Volume of $CO_2$ evolved//Volume of $O_2$

C. Volume of $O_2$ consumed//Volume of $CO_2$ evolved

D. Volume of $CO_2$ consumed//Volume of $O_2$ evolved

**Answer: B**

Watch Video Solution

**258.** Alcoholic fermentation occurs in the presence of

A. Zymase

B. Amylase

C. Invertase

D. Maltase.

**Answer: A**

Watch Video Solution

**259.** RQ of 4, 1 and 0.7 occur in case of

A. Malic acid, palmitic acid and tipalmitin

B. Oxalic acid, carbohydrate and tripalmitin

C. Tripalmitin, malic acid and carbohydrate

D. Palmitic acid, carbohydrate and oxalic acid

**Answer: B**

Watch Video Solution

**260.** Which of the following is produced in oxidative pentose phosphate pathway

A. Pyruvic acid

B. Acetyl CoA

C. $NADH_2$

D. NAD (P) H

**Answer: D**

Watch Video Solution

**261.** Match the columns

| | I | | II |
|---|---|---|---|
| a | 4 C Compound | 1. | Acetyl CoA |
| b | 2 C Compound | 2. | Pyruvate |
| c | 5 C Compound | 3. | Citric acid |
| d | 3 Compound | 4. | α-ketoglutaric acid |
| | | 5. | Malic acid |

A. a-2, b-5, c-3, d-1

B. a-3, b-1, c-4, d-2

C. a-5, b-1, c-4, d-2

D. a-5, b-3, c-1, d-2

**Answer: C**

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**262.** There is no transfer of electrons from cyt b to cyt c as

A. Energy is not available

B. The two are not nearby

C. Electron are transported in pairs

D. Electrons have no affinity for cyto-chromes.

**Answer: B**

Watch Video Solution

**263.** Which is wrong about Krebs cycle

A. It occurs in mitochondira

B. It starts with 6 carbon compound

C. It is also called citric acid cycle

D. Glycolysis is linked to it through malic acid.

**Answer: D**

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**264.** ATP synthesis proposed by Peter Mithchell is

A. Phosphorylation

B. Photophosphorylation

C. Oxidative phosphorylation

D. Chemiosmotic synthesis.

**Answer: D**

Watch Video Solution

**265.** Succinate + FAD forms

A. Fumarate + $FADH_2$

B. Malate + $NADH_2$

C. $Isocitrate +$ NADH_(2)`

D. Citrate + Water.

**Answer: A**

Watch Video Solution

**266.** For formation of ethanol, pyruvic acid is first changed to acetaldehyde by enzyme

A. Pyruvate dehydrogenase

B. Pyruvate decarboxylase

C. Alcohol oxidase

D. Alcohol dehydrogenase.

**Answer: B**

Watch Video Solution

**267.** In glycolysis, 6-C compounds are split into 3-C compounds by enzyme

A. Isomerase

B. Aldolase

C. Hexokinase

D. Dehydrogenase.

**Answer: B**

Watch Video Solution

**268.** Lactic acid is produced in the process of

A. Fermentation

B. HMP

C. Krebs cycle

D. Glycolysis.

**Answer: A**

Watch Video Solution

**269.** All enzymes of TCA cycle are located in the mitochondrial matrix except one which is located in inner mitochondrial membranes in eukaryotes and in cytosol in prokaryotes. This enzyme is

A. Lactate dehyderogenase

B. Malate dehydrogenase

C. Isocitrate dehydrogenase

D. Succinate dehydrogenase.

**Answer: D**

Watch Video Solution

**270.** The overall goal of glycolysis, Krebs cycle and the electron transport system is the formation of

A. ATP in small stepwise units

B. ATP in one large oxidation reaction

C. Sugars

D. Nucleic acid.

**Answer: A**

Watch Video Solution

**271.** Acetyl CoA forms a 6-C compound after combining with

A. Malic acid

B. Citric acid

C. Succinic acid

D. Oxaloacetic acid.

**Answer: D**

Watch Video Solution

**272.** Which is correct for ADP

A. Two high energy bonds

B. One high energy bond

C. Three high energy bonds

D. None of the above

**Answer: B**

Watch Video Solution

**273.** A molecule of ATP is formed as an electron passes from

A. Cyt c to Cyt a

B. Cyt b to Cyt c

C. Cyt a to Cyt c

D. Cyt c to Cyt b.

**Answer: B**

Watch Video Solution

**274.** In which step of Krebs cycle, $CO_2$ is evolved

A. Isocitric acid $\rightarrow$ Oxalosuccinic acid

B. Succinic acid $\rightarrow$ Fumaric acid

C. Oxalosuccinic acid $\rightarrow$ $\alpha$-ketoglutaric acid

D. Maleic acid $\rightarrow$ Oxaloacetic acid.

**Answer: C**

Watch Video Solution

**275.** An enzyme not used in Krebs cycle is

A. Aconitase

B. Decarboxylase

C. Fumarase

D. Aldolase.

**Answer: D**

Watch Video Solution

**276.** In TCA cycle, conversion of succinyl CoA to succinic acid needs

A. GDP+iP

B. CoA+GTP+ip

C. Acetyl CoA+GDP+iP

D. Acetyl CoA+GTP+iP

**Answer: A**

Watch Video Solution

**277.** Calorific value of carbohydrates, protein and fats are

A. 4.1 kcal/g, 5.65 kcal/g, 9.45 kal/g

B. 5.65 kcal/g, 10 kcal/g, 2.3 kcal/g

C. 3.1 kcal/g, 9 kcal/g, 6 kcal/g

D.

**Answer: A**

Watch Video Solution

**278.** Which cell does not respire

A. RBC

B. Sieve tube cell

C. Epidermal cell

D. Cork cell.

**Answer: D**

View Text Solution

**279.** A value of RQ less than one means

A. Carbohydrates are used as respiratory material

B. Organic acids are used as respiratory substances

C. Oxidation of respiratory substrate consume more $O_2$ than $CO_2$ released

D. Oxidation of respiratory substrate consume more $O_2$ tha $CO_2$ released

**Answer: C**

Watch Video Solution

**280.** Match the columns

| | I | | II |
|---|---|---|---|
| a | 4 C Compound | 1. | Acetyl CoA |
| b | 2 C Compound | 2. | Pyruvate |
| c | 5 C Compound | 3. | Citric acid |
| d | 3 Compound | 4. | α-ketoglutaric acid |
| | | 5. | Malic acid |

A. a-2, b-5, c-3, d-1

B. a-5, b-1, c-4, d-2

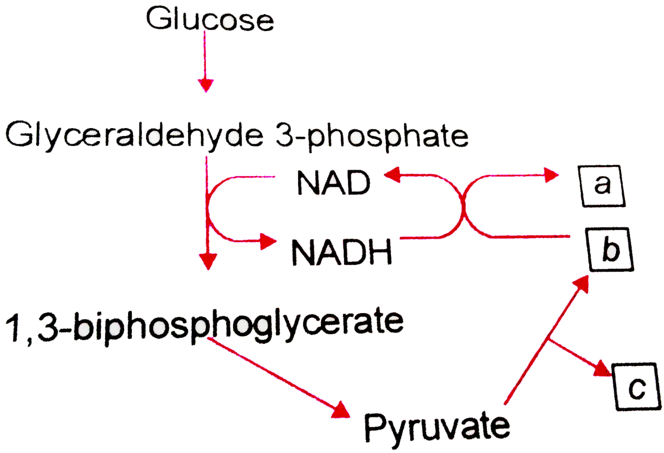
C. a-3, b-1, c-4, d-2

D. a-5, b-3, c-1, d-2

**Answer: B**

Watch Video Solution

**281.** Choose the correct combination of labelling the molecules involved in the pathway of anaerobic respiration in Yeast




A. $a - ethanol, b - CO_2, c - ac\eta ldehyde$

B. $a - CO_2, b - ac\eta ldehyde, c - ethanol$

C. $a - CO_2, b - ethanol, c - ac\eta ldehyde$

D. $a - ethanol, b - ac\eta ldehyde, c - CO_2$

**Answer: D**

Watch Video Solution

**282.** Pick the reaction of glycolysis where a water molecule is removed

A. 2-phosphoglycerate$\rightarrow$PEP

B. PEP$\rightarrow$Pyruvic acid

C. Glucose$\rightarrow$Gulcose 6-phosphate

D. Fructose 6- phosphate$\rightarrow$Fructose 1, 6-biphosphate

**Answer: A**

Watch Video Solution

**283.** In anaerobic respiration, 4 moelcules of glucose produce

A. 144 ATP

B. 20 ATP

C. 16 ATP

D. 8 ATP

**Answer: D**

Watch Video Solution

**284.** Phosphoglyceraldehyde is changed to biphosphoglyceric acid through

A. Carboxylation and hydration

B. Phosphorylation and hydration

C. Decarboxylation and hydrogenation

D. Dephosphorylation and dehydrogenation.

**Answer: B**

Watch Video Solution

**285.** Oxalosuccinic acid, a transient intermediary compound of Krebs cycle is

A. 4-carbon compound

B. 5-carbon compound

C. 6-carbon compound

D. 3-carbon compound.

**Answer: C**

Watch Video Solution

**286.** Ratio of vaolume of $CO_2$ liberated to volume of $O_2$ consumed is

A. $CQ \quad CO_2 / O_2$

B. $RQ \quad CO_2 / O_2$

C. $MQ \quad O_2 / CO_2$

D. $PQ \quad O_2 / CO_2$.

**Answer: B**

Watch Video Solution

**287.** Glyceraldehyde phosphate is oxidised in glycolysis. What is fate of hydrogen atom and electron liberated. They cause

A. Oxidation of $NAD^+$

B. Reduction of $NAD^+$

C. Change in oxaloacetic acid

D. Formation of methane.

**Answer: B**

Watch Video Solution

**288.** A reaction catalysed by an enzyme not found in mitochondiral matrix

A. Conversion of pyruvic acid to acetyl CoA

B. Oxidative decarboxylation of $\alpha$-ketoglutaric acid

C. Oxidation of succinic acid

D. Cleavage of succinyl CoA.

**Answer: C**

Watch Video Solution

**289.** 3-Phosphoglyceraldehyde is oxidised in glycolysis to form

A. 1,3-biphosphoglycerate

B. 3-phosphoglycerate

C. 2-phosphoglycerate

D. Phosphophenol pyruvate.

**Answer: A**

Watch Video Solution

**290.** Aerobic respiration occurs in

A. Mitochondria

B. Peroxisomes

C. Cytoplasm

D. Cytoplasm and mitochondria.

**Answer: D**

Watch Video Solution

**291.** The most common respiratory substrate is

A. Fructose

B. Glucose

C. Sucrose

D. Lactose.

**Answer: B**

Watch Video Solution

**292.** During strenous exercise glucose is converted into

A. Strach

B. Glycogen

C. Lactic acid

D. Pyruvic acid.

**Answer: C**

Watch Video Solution

**293.** Find out the correct options

1. Copper is present in cytochrome oxidase

2. Pantothenic acid is precursor of CoA

3. Thymine pyrophosphate is prosthetic group in decarboxylases

4. Zinc is present in RNA and DNA polymerases.

A. 1, 2, 3 correct

B. 1, 2 correct

C. 2, 4 correct

D. 1, 3 correct.

**Answer: B**

Watch Video Solution

**294.** The pyruvic acid formed in Glycolysis is oxidised to $CO_2$ and $H_2O$ in a cycle called

A. Calvin cycle

B. Hill reaction

C. Krebs cycle

D. Nitrogen cycle.

**Answer: C**

Watch Video Solution

**295.** R.Q. is one in case

A. Fatty acids

B. Carbohydrates

C. Nucleic acid

D. Organic acids.

**Answer: B**

Watch Video Solution

**296.** Cellular respiration first begins in

A. Cytoplasm

B. Carbohydrates

C. Nucleic acid

D. Organic acids.

**Answer: A**

Watch Video Solution

**297.** The enzyme which converts glucose into ethyl alchohol $(C_2H_5OH)$ is

A. Invertase

B. Lipase

C. Zymase

D. Diastase.

**Answer: C**

Watch Video Solution

**298.** the chemiosmotic coupling hypothesis of oxidative phosporylaion propass that adenosine triphoshate (ATP) is formed becouse

A. Proton gradient forms across inner membrane

B. Changed impermeability of inner mitochondrial membrane to ADP

C. High energy bonds are formed in mitochondrial proteins

D. ADP is pumped out of the matrix into intermembrane space.

**Answer: A**

Watch Video Solution

**299.** The energy releasing process in which the substrate is oxidised without an external acceptor is called or Lactic acid converted into alcohol in process called

A. Aerobic respiraton

B. Fermentation

C. Photorespiration

D. Glycolysis.

**Answer: D**

Watch Video Solution

**300.** Calorie is the unit of

A. Sound

B. Light

C. Heat

D. Temperature.

**Answer: C**

Watch Video Solution

**301.** Oxidative phosphorylation refers to

A. Anaerobic production of ATP

B. Citric acid cycle production of ATP

C. Production acid cycle production of ATP

D. Alcoholic fermentaion.

**Answer: B**

Watch Video Solution

**302.** R.Q. would depend upon

A. Nature of enzymes

B. Nature of substrate

C. Amount of $CO_2$ released

D. Amount of $O_2$ utilised.

**Answer: B**

Watch Video Solution

**303.** Match the columns

| | I | | II |
|---|---|---|---|
| a | Oxaloacetate | p | 6 C compound |
| b | Phosphoglyceral-dehyde | q | 5 C compound |
| c | Isocitrate | r | 4 C compound |
| d | $\alpha$-ketoglutarate | s | 2 C compound |
| | | t | 2 c compound. |

A. a-s, b-t, c-q, d-r

B. a-r, b-t, c-p, d-q

C. a-r, b-s, c-p, d-q

D. a-q, b-s, c-p, d-t.

**Answer: C**

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**304.** Which is correct for catabolism of 18 C fatty acid?

A. Mitochondria, beta oxidation, 148 ATP molecules

B. Mitochondria, beta oxidation, 140 ATP molecules

C. Cytosol, beta oxidation 146 ATP molecules

D. Cytosol, beta oxidation, 140 ATP molecules

**Answer: A**

Watch Video Solution

**305.** Direct ATP yield during Krebs cycle per glucose molecule is

A. 2

B. 8

C. 30

D. 38

**Answer: A**

Watch Video Solution

**306.** Which one is complex V of mitochondrial ETS

A. NADH dehydrogenase

B. ATP synthetase

C. Succinate dehydrogenase

D. Ubiquinone

**Answer: B**

Watch Video Solution

**307.** In which of the following parts of mitochondria, succinic dehydrogenase enzyme is located

" " Or

In mitochondria, enzyme cytochrome oxidase is present in

A. Perimitochondrial space

B. Outer membrane

C. Inner membrane

D. Matrix

**Answer: C**

Watch Video Solution

**308.** Aerobic respiratory pathway is appropriately termed

A. Anabolic

B. Catabolic

C. Amphibolic

D. Parabolic.

**Answer: C**

Watch Video Solution

**309.** Conversion of pyruvic acid to acetyl CoA is

A. Reductive carboxylation

B. Oxidative decarboxylation

C. Oxidative carboxlation

D. Reductive decarboxylation.

**Answer: B**

Watch Video Solution

**310.** Reduction of $NAD^+$ does not occur in the reaction

A. Pyruvic acid $\rightarrow$ Acetyl CoA

B. Isocitric acid $\rightarrow$ $\alpha$-ketogulatric acid

C. Malic acid $\rightarrow$ Oxaloacetic acid

D. Succinic acid $\rightarrow$ Fumaric acid.

**Answer: D**

Watch Video Solution

**311.** How many PGAL are produced by glycolysis of three molecules of glucose ? How many ATP are released by respiration of these PGAL till formation of $CO_2 \text{ and } H_2O$

A. 4 PGAL-40 ATP

B. 6 PGAL-120 ATP

C. 4 PGAL-80 ATP

D. 5 PGAL-160 ATP

**Answer: B**

Watch Video Solution

**312.** Final product of ETS of mitochondria is

A. $H_2O$

B. $H^+$

C. Electrons

D. All the above

**Answer: A**

Watch Video Solution

313. $F_1$ particle of oxysome

A. Releases proton energy

B. Utilises proton energy

C. Has no role in energy consumption

D. Lies in outer chamber.

**Answer: B**

Watch Video Solution

**314.** Which of the following respiratory substances requires the highest number of $O_2$ molecules for its complete oxidaiton.

A. Triolein

B. Oleic acid

C. Tripalmitin

D. Tartaric acid.

**Answer: A**

Watch Video Solution

**315.** for respiratory enzymes are given below. Arrange them in increasing order of the carbon number of the substrates on which they act

Enolase (ii) Aconitase

(iii) fumerase (iv) Alcohol dehydrogenase

A. d, a, b, c

B. b, d, c, a

C. a, d, c, b

D. d, a, c, b.

**Answer: D**

Watch Video Solution

**316.** Pyruvate dehydrogenase complex needed for conversion of pyruvic acid to acetyl CoA is located in

A. Intermembrane space

B. Cytoplasm

C. Matrix of mitochondira

D. Grana of chloroplast.

**Answer: C**

Watch Video Solution

**317.** Which group of scientists discovered glycolysis

A. Embden, Merrison and Pitches

B. Embden, Meyerhof and Parnas

C. Emerson, Hoffman and Peterson

D. Avery, Macleod and Mc Carthy.

**Answer: B**

Watch Video Solution

**318.** ATP is synthesized in

A. Ion Channels

B. Plasmalemma

C. $F_0$ particles

D. $F_1$ particles.

**Answer: D**

Watch Video Solution

**319.** Which of the following membrane bound complex in mitochondria is not a proton pump?

A. Cytochrome b,c

B. Cytochrome c oxidase

C. NADH dehydrogenase

D. Succinate dehydrogenase.

**Answer: D**

Watch Video Solution

**320.** Which of the following is a biological uncoupler of oxidative phosphorylation

A. Thermogenin

B. 2, 4-Dichlorophenoxyacetic acid

C. 2, 4-Dinitrophenol

D. Ethylene diaminotetra-acetic acid.

**Answer: A**

Watch Video Solution

**321.** Which of the following is used as a cellular respiration indicator

A. Tetrazolium chloride

B. Ethanol

C. Suchiff s reagent

D. Lactic acid.

**Answer: A**

Watch Video Solution

**322.** Citric acid cycle is.......step in carbohydrate metavbolism

A. First

B. Second

C. Third

D. Fourth.

**Answer: C**

Watch Video Solution

**323.** Chemiosmosis was first described by

A. Boyer

B. Walker

C. Mitchell

D. Meischer.

**Answer: C**

Watch Video Solution

**324.** In Kreb's cycle OAA accepts acetyl CoA to form

A. Citric acid

B. Oxalosuccinate

C. Fumarate

D. Succinyl CoA

**Answer: A**

Watch Video Solution

**325.** In glycolytic pathway which of the following steps shows reduction of co-enzyme

A. 1,3-diphosphoglycerate to 3-phosphogly-create

B. Glucose 6-Phosphate to fructose 6-phosphate

C. 3-Phosphogylcerate to 2-phosphogylcerate

D. Glyceraldehyde 3-phosphate to 1-3, diphosphoglycerate.

**Answer: D**

Watch Video Solution

**326.** R.Q. for tripalmatin as respiratory substrate is

A. 0.7

B. 1

C. 0.9

D. $\infty$

**Answer: A**

Watch Video Solution

**327.** Which of the following is a 4-carbon compound

A. Oxaloacetic acid

B. Citric acid

C. Phosphoglyceric acid

D. Phosphoenol pyruvate

**Answer: A**

Watch Video Solution

**328.** Yeast is

A. Rarely anaerobic

B. Anaerobic

C. Purely aerobic

D. Both aerobic and anaerobic

**Answer: D**

Watch Video Solution

**329.** Oxidative decarboxylation occurs during the reaction

A. Citrate $\rightarrow$ Isocitrate

B. Pyruvic acid $\rightarrow$ Acetyl CoA

C. Succinate $\rightarrow$ Fumarate

D. Fumarate $\rightarrow$ Malate.

**Answer: B**

Watch Video Solution

**330.** Energy liberated during respiration is stored as

A. ATP

B. ADP

C. FAD

D. NADP.

**Answer: A**

Watch Video Solution

**331.** The energy releasing process in which the substrate is oxidised without an external acceptor is called or Lactic acid converted into alcohol in process called

A. Fermentation

B. Aerobic respiration

C. Photorespiration

D. Glycolysis.

**Answer: D**

Watch Video Solution

**332.** Which processes of Krebs' cycle are associated with both decarboxylations and dehydrogenation ?

A. Succinate $\rightarrow$ Fumarate, Fumarate $\rightarrow$ Malate

B. Malate $\rightarrow$ Oxaloacetate, Succinate $\rightarrow$ Fumarate

C. $\alpha$-Ketoglutaric acid $\rightarrow$ Succinate, Malate $\rightarrow$ Oxaloacetate

D. Isocitrate $\rightarrow$ $\alpha$-Ketoglutaric acid, $\alpha$-ketoglutaric acid $\rightarrow$ Succinate.

**Answer: D**

Watch Video Solution

**333.** How many ATP molecules can be produced through oxidative phosphorylation of $2NADH_2$ and $3FADH_2$

A. 15

B. 24

C. 6

D. 12

**Answer: D**

Watch Video Solution

**334.** In Krebs' cycle, second decarboxylation occurs during

A. $\text{Pyruvate}\rightarrow\text{Acetyl CoA}$

B. $\alpha-\text{Ketoglutarate}\rightarrow\text{Succinyl CoA}$

C. $\text{Oxalosuccinic acid}\rightarrow\text{alpha-ketoglutarate}$

D. $\text{Malic acid}\rightarrow\text{Fumaric acid.}$

**Answer: B**

Watch Video Solution

**335.** Link reaction between glycolysis and Krebs cycle is

A. Pyruvate $\rightarrow$ Acetyl CoA

B. PGL $\rightarrow$ 1:3-diPGA

C. Citric acid $\rightarrow$ Isocitric acid

D. Malate $\rightarrow$ OAA.

**Answer: A**

Watch Video Solution

**336.** Turns of Krebs cycle required for complete oxidation of one molecule of glucose are

A. 2

B. 3

C. 4

D. 6

**Answer: A**

Watch Video Solution

**337.** Decarboxylation occurs during

A. Glycolysis

B. ETS

C. Krebs cycle

D. All the above

**Answer: C**

Watch Video Solution

**338.** ATP does not provide phosphate in the reaction

A. Glucose $\rightarrow$ Glucose 6-P

B. Fructose $\rightarrow$ Fructose 6-P

C. PGAL $\rightarrow$ 1:3-diPGA

D. PEPA $\rightarrow$ Pyruvic acid.

**Answer: C**

Watch Video Solution

**339.** In alcoholic fermentation, two molecules of glucose produce ethanol and $CO_2$ respectively

A. 2+2

B. 3+3

C. 4+4

D. 6+6

**Answer: C**

Watch Video Solution

**340.** Two pairs of electrons passing from NADH molecules to oxygen generate

A. 2 ATP

B. 3 ATP

C. 4 ATP

D. 6 ATP

**Answer: D**

Watch Video Solution

**341.** In citric acid cycle, the step not using dehydrogenase enzymes is

A. Malic acid to oxaloacetate

B. Succinate to fumarate

C. Oxaloacetate to citric acid

D. Citric acid to $\alpha$-ketoglutarate.

**Answer: C**

Watch Video Solution

**342.** RQ of protein is

A. 0.7

B. 1

C. 0.9

D. More than one.

**Answer: C**

Watch Video Solution

**343.** Chemiosmotic hypothesis give by Peter Mitchell proposes the machanism of

A. Synthesis of ATP

B. Synthesis of $FADH_2$

C. Synthesis of NADH

D. Synthesis of NADPH.

**Answer: A**

Watch Video Solution

**344.** Substrate level phosphorylation occurs during which step of Krebs' cycle

A. Succinate to malate

B. Succinyl CoA to succinate

C. Malate to Fumarate

D. Malate to oxaloacetate

**Answer: B**

Watch Video Solution

**345.** In ETS, complex I and IV are respectively

A. $\text{NADH dehydrogenase and } FADH_2$

B. $FADH_2 \text{ and NADH dehydrogenase}$

C. NADH dehydrogenase and cytochrome oxidase complex

D. NADH dehydrogenase and ATP synthase

**Answer: C**

Watch Video Solution

**346.** Select the wrong statement

A. RQ is 0.7 with tripalmitin

B. Link compound between glycolysis and Krebs cycle is malic acid

C. 36 ATP molecules are produced per glucose molecule in aerobic respiration

D. 2 ATP molecules are produced per glucose molecule in anaerobic respiration

**Answer: B**

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**347.** Which of the following minerals activate the enzymes involved in respiration?

A. N and P

B. Mg and Mn

C. K and Ca

D. S and Fe

**Answer: B**

Watch Video Solution

**348.** Glycolysis

A. Occurs in mitochondria

B. Has no connection with ETC

C. Reduces 2 molecules of $NAD^{+}$ per glucose

D.

**Answer: C**

Watch Video Solution

**349.** In mitochondria, protons accumulate in the

A. Outer membrane

B. Intermembrane space

C. Inner membrane

D. Matrix.

**Answer: B**

Watch Video Solution

**350.** After glycolysis, fate of glucose in mitochondrial matrix is

A. Hydrolysis

B. Oxidative decarboxylation

C. Reduction

D. Oxidation.

**Answer: B**

Watch Video Solution

**351.** Identify the membrane across which the prton $(H^+)$ gradient facilitates ATP synthesis in a typical eukaryotic cell

A. Plasma membrane

B. Mitochondrial outer membrane

C. Mitochondrial inner membrane

D. Nulear membrane.

**Answer: C**

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**352.** how many ATP molecules will be generated in a plant system during complete oxidation of 40 moles of glucose

A. 3040

B. 380

C. 190

D. 1520

**Answer: D**

Watch Video Solution

**353.** Read the following four statements (A-D)

(A) Both, photophosphorylation and oxidative phoshorylation involve up hill transport of protons across the membrane

(B) In dicot stems, a new cambium originates from the cell of pericycle at the time of secondary growth

(C ) Stamens in flowers of Gloriosa and Petunia are polyandrous

(D)Symbiotic nitrogen-fixers occur in the free-living state also in soil

How many of the above statements are right

A. One

B. Two

C. Three

D. Four.

**Answer: B**

Watch Video Solution

**354.** The number of molecules of pyruvic acid formed from one molecule of glucose at the end of glycolysis is

A. One pyruvic

B. Two pyruvic

C. Three pyruvic

D. Four pyruvic

**Answer: B**

Watch Video Solution

**355.** Consider the following statements with respect to respiration.

(i) Glycolysis occurs in the cytoplasm of the cell.

(ii) Aerobic respiration takes place within the mitochondria.

(iii) Electron transport system is present in the outer mitochondrial membrane.

(iv) $C_{51}H_{98}O_6$ is the chemical formula of tripalmitin, a fatty acid.

(v) Respirtoary quotient $= \frac{\text{Volume of} O_2 \text{evolved}}{\text{Volume of} CO_2 \text{consumed}}$ of the above statements

A. a,b and d are correct

B. b, c and d are correct

C. c, d and e are correct

D. b,d and e are correct

**Answer: A**

Watch Video Solution

**356.** In ETC, first ATP is formed when hydrogen passes from

A. FMN to NAD

B. FMN to CoQ

C. NAD to FMN

D. NAD to CoQ

**Answer: C**

Watch Video Solution

**357.** The first stable compound of Krebs cycle is

A. Acetyl CoA

B. Citric acid

C. Oxaloacetic acid

D. Fumaric acid.

**Answer: B**

Watch Video Solution

**358.** Select a suitable name for the following process

$$C_6H_{12}O_6 + 2ADP + 2\Pi \rightarrow 2C_2H_5OH + 2ATP + 2CO_2 \uparrow$$

A. Photorespiration

B. Lactate fermentation

C. Aerobic respiration

D. Alcoholic fermentaion.

**Answer: D**

Watch Video Solution

**359.** Chemiosmotic theory of ATP synthesis in mitochondria is based on

A. $K^+$ gradient

B. $H^+$ gradient

C. $Na^+$ gradient

D. $Ca^{2+}$ gradient.

**Answer: B**

Watch Video Solution

**360.** Number of ATP molecules produced from 1 glucose molecule in aerobic respiration

A. 36

B. 32

C. 30

D. 28

**Answer: A**

Watch Video Solution

**361.** Oxidation of one molecule of glucose in aerobic respiration produces

A. 2 ATP

B. 30 ATP

C. 36 ATP

D. 38 ATP

**Answer: D**

Watch Video Solution

**362.** TCA cycle is named after

A. Embden

B. Emerson

C. Krebs

D. Calvin.

**Answer: C**

Watch Video Solution

**363.** During movement of electron through ETC

A. Electron undergoes resonance

B. Electron undergoes fluorescence

C. Electron undergeos active transport

D. pH of matrix increases.

**Answer: D**

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**364.** The substrate for pentose phosphate pathway is

A. Glucose 6-phosphate

B. Glucose 1-phosphate

C. Fructose 6-phosphate

D. Fructose 1-phosphate

**Answer: A**

Watch Video Solution

**365.** During EMP pathway, ATP is produced through

A. Oxidative phosphorylation

B. Cyclic phosphorlation

C. Substrate phosphorylation

D. None of the above

**Answer: C**

Watch Video Solution

**366.** Movement of ten electron from mitochondrial NADH molecules produces water molecules

A. 20

B. 15-

C. 10

D. 5

**Answer: D**

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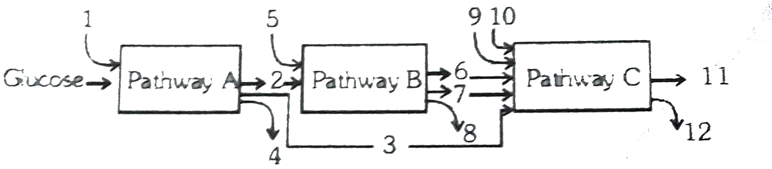
**367.** The three boxes in this diagram represent the three major biosynthetic pathways in aerobic respiration. Arrows represent net reactants or products.




Arrow

numbered 4,8 and 12 can all be

A. $FAD$ or $FADH_2$

B. NADH

C. ATP

D. $H_2O$.

**Answer: C**

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**368.** Acetyl CoA is a product of

A. $\beta$-oxidation of fatty acids

B. Deamination of amino acids

C. Glycolysis

D. All the above

**Answer: D**

Watch Video Solution

**369.** How many six carbon organic acids occur in TCA cycle

A. 1

B. 3

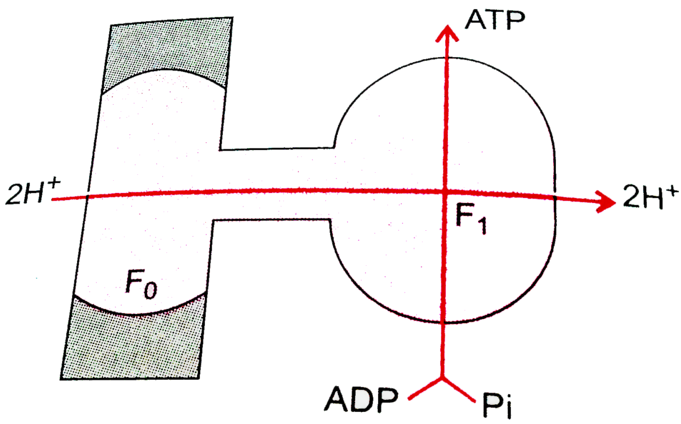
C. 2

D. 4

**Answer: B**

Watch Video Solution

**370.** Which substance is present in $F_1$ head piece given in diagram




A. Peripheral membrane lipid complex

B. Peripheral membrane protein complex

C. Peripheral membrane glycolipid complex

D. Both A and B

**Answer: B**

View Text Solution

**371.** Oxidative decarboxylation occurs during formation of

A. Citric acid and succinic acid

B. Citric acid and oxaloacetic acid

C. Acetyl CoA and succinyl CoA

D. Oxaloacetic acid and oxalosuccinic acid.

**Answer: C**

Watch Video Solution

**372.** Given below is an electron acceptor. Mention its status which is labelled as a $Cyt^{++} \xrightarrow{2e} Cyt^{+++}a$

A. Oxidised

B. Reduced

C. Phosphorylation

D. Hydrated.

**Answer: B**

View Text Solution

**373.** What is respiratory quoient during germination of fatty seeds

A. Unity

B. Less than unity

C. More than unity

D. Zero

**Answer: B**

Watch Video Solution

**374.** Which one is amphibolic

A. Glycolysis

B. ETC

C. Gluconeogenesis

D. Krebs cycle

**Answer: D**

Watch Video Solution

**375.** Oxidation of one $NADH$ and one $FADH_2$ respectively gives rise to____and ____ATP molecules.

A. 2 and 3 ATP

B. 18 and 36 ATP

C. 36 and 18 ATP

D. 3 and 2 ATP

**Answer: D**

Watch Video Solution

**376.** Which stages of aerobic respiration take place in matrix of mitochondria

(i) Oxidative decarboxylation of pyruvic acid

(ii) Glycolysis

(iii) Krebs cycle

(iv) Oxidative phosphorylation

A. I and ii only

B. ii and iii only

C. iii and iv only

D. I and iii only

**Answer: D**

Watch Video Solution

**377.** Which is true of glycolysis

A. In aerobic organisms, it is the only process in respiration

B. In this process glucose undergoes complete oxidation to form pyruvic acid

C. Enzyme hexokinase catalyses phosphorylation of glucose to glucose 6-phosphate

D. ATP is utilised in conversion of PEP to pyruvic acid

**Answer: C**

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**378.** In Kreb's cycle OAA accepts acetyl CoA to form

A. Formaldehyde

B. Acetate

C. Isocitrate

D. Citrate.

**Answer: D**

Watch Video Solution

**379.** Identify correct pair of statements

(i) Attraction between two molecules of water present in oxylen channel is adhesion

(ii) Number of $O_2$ molecules absorbed is more than number of $CO_2$ molecules released when triolein is respiratory substrate

(iii) Bacillus mycodies is nitrifying bacteria

(iv) Continuous system of cell walls and intercullular spaces in plant tissues is called apoplast

A. ii and iii

B. iii and iv

C. ii and iv

D. I and iv.

**Answer: C**

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**380.** During aerobic respiration, acetyl CoA is synthesised in

A. Cytosol

B. Mitochondrial matrix

C. Perichondrial space

D. Glyoxysomal matrix.

**Answer: B**

Watch Video Solution

**381.** Which of the following acts as a mobile carrier for transfer of electrons between complex III and IV ?

A. Cyt a

B. Cyt b

C. Cyt c

D. Cyt d.

**Answer: C**

Watch Video Solution

**382.** During glycolysis, fructose 1, 6-biphophate is split into

A. Dihydroxyacetone phosphate and 2-phosphoglyceraldehyde

B. Dihydroxy acetone phosphate and 1-phosphoglyceraldehyde

C. Dihydroxyacetone phosphate and 2-phosphoglyceraldehyde

D. Dihydroxyacetone phosphate and 3-phosphoglyceraldehyde.

**Answer: D**

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**383.** Respiratory quotient of glucose is

A. $0.5$

B. $0.7$

C. $1.0$

D. $1.5$

**Answer: C**

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**384.** Out of 38 molecules of ATP produced after aerobic respiration of glucose, the break up in ATP production glycolysis (P), pyruvic acid to acetyl CoA formation (Q) and Krebs cycle (R) is

A. P=2, Q=6, R=30

B. P=8, Q=6, R=24

C. P=8, Q=10, R=20

D. P=2, Q=12, R=24.

**Answer: B**

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**385.** Three major ways for metabolism of pyruvic acid produced in glycolysis are

A. Lactic acid fermentation, alcoholic fermentation and aerobic respiration

B. Oxaloacetic acid fermentation, lactic acid fermentation, aerobic fermentation, lactic acid fermentation, anaerobic fermentation

C. Alcoholic fermentation, oxaloacetic acid fermentation, citric acid fermentation

D. Citric acid fermentation, lactic acid fermentation, alcoholic fermentation.

**Answer: A**

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**386.** Assertion (A). RQ value for fats is less than one. Reason (R). The amount of $CO_2$ released is less than $O_2$ consumed when fats are used in respiration

A. A is true but R is false

B. A is false but R is true

C. Both A and R true and R is correct explanation of A

D. Both A and R are true but R is not the correct explanation of A.

**Answer: C**

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**387.** Identify the correct pair of statements

I. Niacin containing coenzymes facilitates the oxidation of malate in the matrix of mitchondria

II. Heam is the prosthetic group for the enzyme which catalyses the carboxylation of RuBP in the stroma of chloroplast,

III. The electron carrier between cyt c-oxidase and cyt-c-reductase is attached to inner membrane of mitochondria.

IV. Water spliting reaction in the lumen of thylakoid requires chlorine

A. I, II

B. I, IV

C. II, III

D. III, IV

**Answer: B**

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**388.** Match the columns and choose the correct option

| I | II |
|---|---|
| (a) Phosphoenol pyruvate (PEP) | p. 6-carbon compound |
| (b) Ribulose biphosphate (RuBP) | q. 2-carbon compound |
| (c) Oxaloacetic acid (OAA) | r. 4-carbon compound |
| (d) Acetyl CoA | s. 5-carbon compound |
| | t. 3-carbon compound |

A. a-r, b-s, c-t, d-p

B. a-q, b-r, c-s, d-t

C. a-t, b-s, c-r, d-q

D. a-t, b-p, c-q, d-r

**Answer: C**

Watch Video Solution

**389.** The inner membrane of mitochondria is permeable to

A. Glucose

B. Fructose

C. Sucrose

D. ATP.

**Answer: D**

Watch Video Solution

**390.** How many NAD molecules get reduced in complete oxidation of one glucose molecule

A. 2

B. 5

C. 10

D. 12

**Answer: C**

Watch Video Solution

**391.** Enzyme enolase catalyses the conversion of 2-PGA to phosphoenol pyruvic acid in the presence of cofactor

A. $Mn^{2+}$

B. $Fe^{2+}$

C. $Mg^{2+}$

D. $Zn^{2+}$

**Answer: C**

Watch Video Solution

**392.** In which of the following steps of citric acid cycle, $CO_2$ is evolved

I. Citric acid $\rightarrow$ $\alpha$-ketoglutaric acid.

II. Succinic acid $\rightarrow$ malic acid III. Malic acid $\rightarrow$ oxaloacetic acid IV. $\alpha$-Ketoglutaric acid $\rightarrow$ succinyl CoA

A. I and II

B. I and IV

C. II and III

D. II and IV

**Answer: B**

Watch Video Solution

**393.** Oxidative decarboxylation of pyruvic acid results in the formation of

I. Acetyl CoA , II. $CO_2$

III. ATP , IV. $NADH + H^+$

A. I only

B. I and II only

C. I, II and III only

D. I, II and IV only

**Answer: D**

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**394.** Select the correct order of reactions in glycolysis

(a) 3-Phosphoglyceraldehyde $\rightarrow$ 1, 3-biphosp-hoglycerate

(b) 3-phosphoglyceric acid $\rightarrow$ 2-phospho-glycerate

(c) BPGA $\rightarrow$ 3-phosphoglyceric acid

(d) Splitting of 1, 6-fructose biphosphate to dihdroxy acetone phosphate and 3-phosphoglyceraldehyde

A. d, a, c, b

B. b, c, a, b

C. b, d, a, c

D. a, d, c, d

**Answer: A**

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**395.** In which one of the following processes $CO_2$ is not released

A. Aerobic respiration in animals

B. Alcoholic fermentation

C. Lactate fermentation

D. Aerobic respiration in plants.

**Answer: C**

Watch Video Solution

**396.** Assertion : Glucose is favoured respiratory substrate.

Reason : When glucose is used as respiratory substrate and is completely oxidised, RQ is 1.

A. if both are true with reason being correct explanation

B. both true but reason is not correct explanation

C. assertion true but reason is wrong

D. both are wrong

**Answer: A**

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**397.** Which enzyme helps in transfer of phosphate group from ATP to a carbohydrate

A. Phosphatase

B. ATP ase

C. Phosphorylase

D. Catalase.

**Answer: C**

Watch Video Solution

**398.** During anaerobic respiration the conversion of pyruvate into acetaldehyde, along with co-enzyme TPP, the cofactor required is

A. $Mg^{+}$

B. $Mn^{2+}$

C. $Fe^{2+}$

D. $Zn^{2+}$

**Answer: A**

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**399.** Which process does the following equation represent

$C_6H_{12}O_6$ + 2NAD + 2ADP + 2Pi $\rightarrow$ $2CH_3$ - CO-COOH-2NAD$H_2$ + 2ATP

A. Complete glycolysis

B. Complete aerobic respiration

C. Complete anaerobic respiration

D. Complete fermentation.

**Answer: A**

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**400.** Given below are some reactions and the enzymes involved. Identify the correct pairs.

| | I | | II |
|---|---|---|---|
| 1. | Fructose 1,6 diphosphate $\rightarrow$ 3 PGAL + DHAP | A. | Enolase |
| 2. | Citrate $\rightarrow$ Cis – aconitate | B. | Thiokinase |
| 3. | Succinyl Co. A $\rightarrow$ Succinate | C. | Aconitase |
| 4. | 2 PGA $\rightarrow$ PEPA | D. | Aldolase |

A. 1-d, 2-c. 3-b, 4-a

B. 1-a, 2-b, 3-c, 4-d

C. 1-b, 2-a, 3-d, 4-c

D. 1-c, 2-d, 3-a, 4-b

**Answer: A**

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**401.** How much of the energy released during aerobic respiration is approximately conserved in the form of ATP

A. 0.2

B. 0.4

C. 0.6

D. 1

**Answer: B**

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**402.** The last or ultimate electron acceptor in the electron transport system is

A. Cytochrome c

B. Cytochrome $a_3$

C. Cytochrome b

D. $NADPH_2$

**Answer: B**

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**403.** Which of the following is the only 5-carbon compound formed during Krebs cycle

A. Malic acid

B. Succinic acid

C. cis-aconitic acid

D. $\alpha$-ketoglutaric acid.

**Answer: D**

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**404.** When protein is aerobically oxidised, the R.Q. value will be

A. One

B. Zero

C. More than one

D. Less than one

**Answer: D**

Watch Video Solution

**405.** Which one has the lowest respiratory quotient

A. Glucose

B. Tripalmitin

C. Oxalic acid

D. Malic acid.

**Answer: B**

Watch Video Solution

**406.** Which one is the first compound which is common for both glucose and fructose in glycolysis

A. Fructose 6-P

B. Glucose 6-P

C. Fructose 1,6-biphosphate

D. Fructose 1-P.

**Answer: A**

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**407.** Which molecule links glycolysis with fermentation as well as TCA cycle

A. Ethanol

B. Acetaldehyde

C. PEP

D. Pyruvic acid.

**Answer: D**

Watch Video Solution

**408.** In which one of following reactions of glycolysis, oxidation takes place

A. Glucose 6-P to fructose 6-P

B. Fructose 6-P to fructose 1,6-biphosphate

C. 1,3-biphosphoglycerate to 3-phosphogl- yceric acid

D. 3-phosphoglyceraldehyde to 1, 3-bipho-sphoglycerate

**Answer: D**

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**409.** FAD is electron acceptor in citric acid cycle during the oxidation of

A. Malic acid to oxaloacetatic acid

B. Succinic acid to malic acid

C. Citric acid to $\alpha$-ketogulatric acid

D. $\alpha$-ketogulatric acid to succinic acid

**Answer: B**

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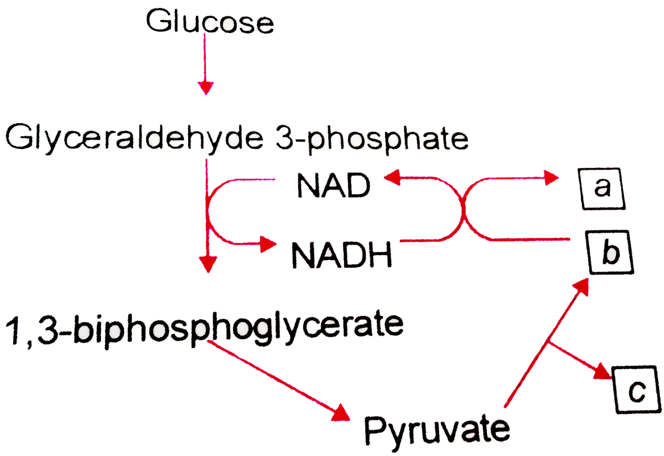
**410.** Choose the correct combination of labelling the molecules involved in the pathway of anaerobic respiration in Yeast




A. $a - CO_2$, b-ethanol, c-acetaldehyde

B. a-ethanol, b-acetaldehyde, $c - CO_2$

C. a-ethanol, $b - CO_2$, c-acetaldehyde

D. a-acetaldehyde, $b - CO_2$, c-ethanol.

**Answer: B**

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**411.** Conversion of pyruvic acid into ethyl alcohol is facilitated by enzyme(s)

A. Carboxylase

B. Phosphatase

C. Dehydrogenase

D. Decarboxylase and dehydrogenase.

**Answer: D**

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**412.** When the respiratory substances are more than one then which respiratory substrates are not used

A. Pure protein

B. Lipid

C. Carbohydrate

D. Both A and B

**Answer: D**

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**413.** During respiration.........................

A. 2 PGAL during glycolysis and none in Krebs cycle

B. 2 PGAL during glycolysis and two pyruvic acid in Krebs cycle

C. 2 PGAL during glycolysis and 4 pyruvic acid in Krebs cycle

D. PGAL is not produced during respiratory events.

**Answer: A**

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**414.** Choose the correct sequence of electron pathway in ETS

A. Cyt oxidase $\rightarrow$ Cyt reductase $\rightarrow$ Succinate dehydrogenase $\rightarrow$ NAD dehydrogenase

B. NADH dehyrogenase $\rightarrow$ Succinate dehydrogenase $\rightarrow$ Cyt c reductase $\rightarrow$ Cyt. C oxidase

C. NADH dehydrogenase $\rightarrow$ Cyt c reductase $\rightarrow$ Cyt c oxidase $\rightarrow O_2$

D. Succinic dehydrogenase $\rightarrow$ Cyt oxidase $\rightarrow$ Cyt. Reductase $\rightarrow$ O_(2)`.

**Answer: C**

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**415.** Which of the two statements together support that respiratory pathway is an amphibolic pathway ,

(i) Fats breakdown to glycerol and fatty acids, subsequently yields acetyl CoA

(ii) In respiration C-C bonds of complex compounds breakdown through oxidation leading to release of energy

(iii) Acetyl CoA from respiratory pathway is withdrawn for synthesis of fatty acids

(iv) Proteins are degraded by protease to amino acids and enter the respiratory pathway

A. I, ii

B. I, iv

C. ii, iv

D. ii, iii

**Answer: D**

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**416.** Which one of the following electron acceptor is present in respiratory chain

A. Cytochrome f

B. Cytochrome $a_3$

C. Plastocyanin

D. Ferredoxin.

**Answer: B**

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**417.** In Krebs cycle guanosine triphosphate is formed during the conversion of

A. Isocitrate to oxalosuccinate

B. Oxalosuccinate to $\alpha$-ketoglutarate

C. Succinyl CoA to succinate

D. Fumarate to malate

**Answer: C**

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**418.** How many glucose molecules are required for the formation of 52 pyruvic acid molecules at the end of glycolysis

A. 52

B. 46

C. 32

D. 26

**Answer: D**

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**419.** In anaerobic respiration, acetaldehyde is reduced to form alcohol by utilising $NADH_2$ obtained from

A. Glycolysis

B. Terminal oxidation

C. Krebs cycle

D. Acetylation.

**Answer: A**

Watch Video Solution

**420.** Function of electron transport chain in both mitochodnria and chloroplasts is to develop

A. Mineral gradient

B. Proton gradient

C. Aqueous gradient

D. Protein gradient.

**Answer: B**

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**421.** Fatty acids are transported into mitochondria bound to

A. Thiokinase

B. Coenzyme A

C. Acetyl CoA

D. Carnitin.

**Answer: D**

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**422.** The coenzyme involved in oxidative decarboxylation is

A. Thiamine pyrophosphate

B. Biotin

C. NAD

D. Pyridoxal phosphate.

**Answer: A**

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**423.** Some desert beetles can survive on "metabolic water" without ever drinking liquid water which

A. Was produced as water in the organisms they eat

B. Is absorbed from the air alongwith respiratory oxygen

C. Is a breakdown product of pyruvate inside the mitochondria alongwith $CO_2$

D. Is a breakdown product from glycolsis in the cytoplasm.

**Answer: C**

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**424.** In the presence of of TPP and carboxylase enzyme, pyruvic acid is converted into

A. Citric acid and $CO_2$

B. Acetaldehyde and $CO_2$

C. Ehtyl alcohol and $CO_2$

D. Acetic acid and $CO_2$

**Answer: B**

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**425.** What will be RQ of a substrate whose respiration equation is

$$C_4H_6O_5 + 3O_2 \rightarrow 4CO_2 + 3H_2O$$

A. 4/5=0.8

B. 5/4=1.25

C. 4/3=1.33

D. 3/4=0.75

**Answer: C**

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**426.** Pick up the reactions form the following where a water molecule is removed and reduction of $NAD^+$ does not occur in the reactions of respiration

(i) Succinic acid to fumaric acid

(ii) Malic acid to oxalacetic acid

(iii) 2-phosphoglycerate to phosphoenol pyruvic acid

(iv) Pyruvic acid to acetyl CoA

A. I, iv

B. I, ii

C. ii, iii

D. I, iii.

**Answer: D**

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**427.** Arrange the following compounds formed in respiration based on their C-atoms : (i) Pyruvic acid (ii) $\alpha$-Ketoglutaric acid (iii) Citric acid (iv) Malic acid

A. iv, I, ii, iii

B. I, iv, ii, iii

C. I, ii, iv, iii

D. I, iv, iii, ii.

**Answer: B**

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**428.** The net production of NADH molecules when 4 glucose molecules yeild 8 molecules of lactic acid through glycolysis and subsequenet fermantation is

A. Four

B. Eight

C. Zero

D. Two.

**Answer: C**

Watch Video Solution

**429.** Which of the following two enzymes catalye the release of $CO_2$ form the substrate

(i) $\alpha$-ketogulatric acid dehydrogenase

(ii) Pyruvate dehydrogenase

(iii) Succinic thiokinase , (iv) Enolase

A. I, ii

B. iii, iv

C. I, iv

D. ii, iii

**Answer: A**

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**430.** In glycolysis during which reaction, water molecule is released

A. 2-Phosphoglyceric acid $\rightarrow$ Phosphoenol pyruvic acid

B. PGAL $\rightarrow$ 3PGA

C. 1,3-biphosphoglyceric acid $\rightarrow$ Phosphoglyceric acid

D. Phosphoenol pyruvic acid $\rightarrow$ Pyruvic acid.

**Answer: A**

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**431.** Match the columns and choose the right option

| I | | II | |
|---|---|---|---|
| (*a*) | Acetyl CoA | (*i*) | 3-carbon compound |
| (*b*) | Malic acid | (*ii*) | 6-carbon compound |
| (*c*) | Pyruvic acid | (*iii*) | 4-carbon compound |
| (*d*) | Glucose | (*iv*) | 2-carbon compound |

A. a-ii, b-iv, c-iii, d-i

B. a-ii, b-iii, c-iv, d-i

C. a-iv, b-I, c-ii, d-iii

D. a-iv, b-iii, c-I, d-ii

**Answer: D**

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**432.** The respiratory quotient value of 0.7 is obtained for

A. Anaerobic respiration

B. Glucose

C. Proteins

D. Organic acids.

**Answer: D**

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**433.** In which one of the following steps of citric acid cycle, FAD is reduced to $FADH_2$

A. Pyruvate $\rightarrow$ Acetyl CoA

B. Succninc acid $\rightarrow$ Malic acid

C. Malic acid $\rightarrow$ Oxaloacetic acid

D. Citric acid $\rightarrow$ $\alpha$-Ketoglutaric acid

**Answer: B**

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**434.** Which of the following biomolecules is common to respiration-mediated breakdown of fats, carbohydrates and proteins

A. Acetyl CoA

B. Glucose 6-phosphate

C. Fructose 1,6-biphosphate

D. Pyruvic acid.

**Answer: A**

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**435.** Oxidative phosphorylation is

A. Formation of ATP energy released from electrons removed during substrate oxidation

B. Formation of ATP by transfer of phosphate group from a sbustrate to ADP

C. Oxidation of phosphate group in ATP

D. Addition of phosphate group to ATP.

**Answer: A**

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**436.** the chemiosmotic coupling hypothesis of oxidative phosporylaion propass that adenosine triphoshate (ATP) is formed becouse

A. A proton gradient forms across the inner mitochondrial membrane

B. There is change in the permeability of the inner mitochondrial membrane towards adenosine diphosphate

C. High energy bonds are formed in mitochondrial proteins

D. ADP is pumped out of matrix into the intermembrane space.

**Answer: A**

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**437.** Assertion : This conversion of 1,3-bishosphoglycerate (BPGA) to 3-phosphoglyceric acid (PGA) is an energy yielding step.

Reason : This energy is trapped by the formation of ATP

A. if both are true with reason being correct explanation

B. both true but reason is not correct explanation

C. assertion true but reason is wrong

D. both are wrong

**Answer: B**

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**438.** Which statement is wrong for Krebs' cycle ?

A. There are three points in the cycle where $NAD^+$ is reduced to NADH + $H^+$

B. There is one point in the cycle where FAD is reduced to $FADH_2$

C. During conversion of succinyl CoA to succinic acid, a molecule of GTP is synthesised

D. The cycle starts with condensation of acetyl group with pyruvic acid to yield citric acid.

**Answer: D**

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## Check Your Grasp

**1.** The tern zymosis was use for fermentation by

A. Buchner

B. Pasteur

C. Dutrochet

D. Kuhne.

**Answer: A**

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**2.** Which one is true ?

A. Fat respiration is a part of floating respiration

B. Fat is used as respiratory substrate only when carbohydrate supply has been consumed

C. Fat enters respiration through acetyl CoA and glycerophosphate

D. All the above

**Answer: A**

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**3.** R.Q. is zero in

A. Succulents

B. Germinating fatty seeds

C. Maturing fatty seeds

D. Anaerobic respiration.

**Answer: A**

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**4.** In glycolysis, NADH is produced during reaction

A. Dihydroxy acetone 3 - P $\rightarrow$ Glyceraldehyde 3-P

B. Glyceraldehyde 3-P $\rightarrow$ 1 : 3 diphosphoglyceric acid

C. Fructose 1 : 6 diphosphate $\rightarrow$ GaP + DiHAP.

D. Phosphenol pyrurate $\rightarrow$ Pyruvic acid.

**Answer: A**

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**5.** In respiration, substrate level phosphorylatin (direct ATP synthesis) occurs in the reaction

A. Dihydroxy acetone 3-P $\rightarrow$ Glyceraldehyde 3-P

B. 3-Phosphoglyceric acid $\rightarrow$ 2-Phospho-glyceric acid

C. 1, 3-bishosphoglyceric acid $\rightarrow$ 3-Phospho-glyceric acid

D. All the above

**Answer: A**

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**6.** Cyt $a_3$ possesses

A. Fe and Mg

B. Cu and Mg

C. Fe and Cu

D. Fe, Mg and Cu.

**Answer: A**

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**7.** 5-carbon dicarboxylic compound of Krebs cycle is

A. Malate

B. Fumarate

C. Succinate

D. $\alpha$-ketoglutarate.

**Answer: D**

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8. Enzyme aconitase of Krebs cycle is required to convert

A. Oxalosucinate to $\alpha$-ketoglutarate

B. Citrate to isocitrate

C. Citrate to cis-aconitate

D. cis-aconitate to isocitrate.

**Answer: A**

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9. In Krebs cycle, $FADH_2$ is formed during conversion of

A. Succinate to fumarate

B. Fumarate to malate

C. Malate to oxaloacetate

D. Isocitrate to oxalosuccinate.

**Answer: A**

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**10.** Out of six protons extruded into outer mitochondrial chember, only two are available form $NADH + H^{+}$. The others come form

A. $FADH_2$

B. $NADPH + H^{+}$

C. Matrix

D. Both A and B.

**Answer: A**

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**11.** Proton channel occurs in

A. $F_1$

B. $F_0$

C. ETC

D. Membrane pores.

**Answer: A**

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**12.** Metabolic water is water

A. Produced in respiration

B. Required for hydrolysis

C. Produced during polymersation

D. Used in photolysis.

**Answer: A**

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**13.** Lactic acid is produced quite often in human

A. Red muscles

B. Cardiac muscles

C. Involutary muscles

D. White muscles.

**Answer: A**

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**14.** Extinction points is

A. Atomospheric oxygen where fire gets automatically extinguished

B. Concentration of oxygen below which aerobic respiration stops

C. Light intensity below which plant will not survive

D. Both B and C

**Answer: A**

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**15.** Switch over from anaerobic to aerobic mode of respiration is accompanied by reduction in consumption of respiratory substrate. The phenomenon is called

A. Warburg effect

B. Pasteur effect

C. Oxygen coefficient

D. Liebig's law.

**Answer: A**

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**16.** A climacteric fruit is

A. Trapa

B. Apple

C. Almond

D. Pistachio.

**Answer: A**

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**17.** Inner mitochondrial membrane is not permeable to

A. NADH

B. Pyruvate

C. Acetate

D. $\alpha$-ketoglutarate.

**Answer: A**

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**18.** Aerobic respiration produces 264 gm of $CO_2$ per 180 gm og glucose. The amount of $CO_2$ produced for the same wieght of glucose in alcoholic fermentation shall be

A. 132 gm

B. 528 gm

C. 88 gm

D. Zero

**Answer: C**

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**19.** 60% of respiration in liver cells is performed through

A. Phosphogluconate shunt

B. Glycolysis

C. Anaerobic respiration

D. Common pathway.

**Answer: A**

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**20.** In hexose monophosphate shunt, glucose 6-phosphate undergoes

A. One dehydrogenation and one decarboxylation

B. Two dehydrogenations and one decarboxylation

C. Two dehydrogenations and two decarboxylations

D. Two dehydrogenations and three decarboxylations.

**Answer: A**

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