Exercise-1

✍ **Marked Questions are for Revision Questions.**

ONLY ONE OPTION CORRECT TYPE

SECTION - A # Introduction, Glycolysis and Fermentation

1.✍ How many ATPs are produced through anaerobic respiration
(1) 8 ATP (2) 4 ATP (3) 3 ATP (4) 2 ATP

2. Which of the following shows higher rate of respiration
(1) Collenchyma (2) leaf (3) Dry seeds (4) Germinating seeds

3. Respiration differs from combustion in which of the following
(1) Energy is released in respiration (2) Substance is oxidised
(3) Enzymes are involved (4) All the above

4. Protein is used as respiratory substrate only when
(1) Carbohydrates are exhausted (2) Fats are exhausted
(3) Both exhausted (4) Fats and carbohydrates are abundant

5. Different steps in respiration are controlled by
(1) Auxin (2) Sugar (3) Enzyme (4) Kinetin

6. Respiration occurs
(1) Only in non-green cells in light (2) Only in non-green cells both in light and dark
(3) In all living cells both in light and dark (4) In all living cells only in light

7.✍ How many ATPs are used in phosphorylation of glucose
(1) One (2) Two (3) Three (4) Four

8.✍ In anaerobic glycolysis, net gain of ATP is
(1) Four (2) Two (3) Eight (4) None of the above

9. Calculate total production of ATP in aerobic glycolysis
(1) Two (2) four (3) Eight (4) Ten

10. Glycolysis occurs in
(1) Mitochondria (2) Golgi body (3) Cytoplasm (4) Chloroplast

11. The end product of anaerobic respiration in plants is
(1) Pyruvic acid (2) Malic acid (3) Ethyl alcohol (4) Methyl alcohol

12. Which group of the following scientists discovered the EMP pathway of glycolysis
(1) Embden, Meyerhof and Parnas (2) Emerson, Hoffman and Petrison
(3) Embden, Morrison and Picher (4) Avery, Macleod and Mccarthy

13.✍ Which is not true for glycolysis
(1) End product is CO_2, H_2O (2) Substrate level phosphorylation
(3) Production of ATP (4) Expenditure of ATP

14. Which of the following is formed in presence of pyruvate kinase
(1) Phosphoenol pyruvic acid (2) Pyruvic acid
(3) Both (1) and (2) (4) None of these

15. The full form of NAD is
(1) Nicotine adenosine diphosphate (2) Nicotinamide adenosine dinucleotide
(3) Nicotinamide adenine dinucleotide (4) Nicotinamide adenine diphosphate

16. Vinegar is synthesized from the alcohol by
(1) Lactobacillus bacteria (2) Bacilli aceti bacteria
(3) Azotobacter (4) Rhizobium

17. Anaerobic process after glycolysis is called
(1) TCA (2) Calvin cycle (3) Krebs cycle (4) Fermentation

18. The tissue of highest respiratory activity is
(1) Meristems (2) Ground tissue (3) Pholem (4) Mechanical tissue

19. The high-energy bond of ATP are between
(1) C-C (2) C-O (3) C-N (4) O-P

20. Which of the following involves the loss of two protons and two electrons
(1) Deamination (2) Dehydrogenation (3) Carboxylation (4) None of these

21. Which of the following is the first step of glycolysis
(1) Breakdown of glucose (2) Phosphorylation of glucose
(3) Conversion of glucose into fructose (4) Dehydrogenation of glucose

SECTION - B # Aerobic respiration – Link reaction and Krebs cycle, Terminal oxidation, Pentose Phosphate Pathway (PPP) Respiratory balance sheet, Amphibolic pathway, Respiratory quotient

1. When is $NADH+H^+$ not formed in Kreb's cycle
(1) During formation of oxalosuccinic acid from isocitric acid
(2) During formation of succinyl Co-A from α-Ketoglutaric acid
(3) During formation of fumaric acid from succinic acid
(4) During formation of oxaloacetic acid from malic acid

2. How many molecules of ATPs are formed from one Acetyl Co-A through Krebs cycle?
(1) 15 (2) 12 (3) 8 (4) 4

3. How many $NADH.H^+$ are formed from pyruvic acid
(1) Two (2) Three (3) Four (4) Five

4. Enzymes of oxidative phosphorylation are found in
(1) Endoplasmic reticulum (2) Chloroplast
(3) Mitochondria (4) Golgi bodies

5. Cofactor which is essential for the synthesis of Acetyl Co -A
(1) TPP (2) Mg^{+2} & Co- A (3) Lipoic acid (4) All the above

6. Which one of the following enzyme absent in mitochondria
(1) Fumarase (2) Hexokinase
(3) Malic dehydrogenase (4) Aconitase

7. Which complex is formed by Cyt. a and Cyt.a_3
(1) Complex–I (2) Complex–II (3) Complex–III (4) Complex–IV

8. From which place H^+ (protons) enter matrix from outside of inner membrane of mitochondria
(1) Any part of the membrane
(2) Through elementary particles/oxysomes of membrane
(3) From terminal end of cristae
(4) None of the above

9. Terminal electron acceptor in ETS is
(1) Cytochrome a - a_3 (2) O_2 (3) Cytochrome (4) Ubiquinone

10. Which transfer electrons in ETS
(1) Phytochromes (2) F_1 particles (3) Fe - S (4) Cytochromes

11. The last or terminal cytochrome in respiratory chain is
(1) Cyt b (2) Cyt a_3 (3) Cyt a (4) Cyt c

12. The enzymes for electron transport system are located in the
(1) Plastids (2) Endoplasmic reticulum
(3) Ribosomes (4) Mitochondria

13. What is the R.Q. of proteins, generally?
(1) One (2) Less than one (3) More than one (4) Infinite

14. What is the R.Q. of organic acids, generally?
(1) One (2) Less then one (3) More than one (4) Zero

15. At high temperature in aerobic respiration, why the R.Q. value becomes more than one
(1) Requirement of O_2 increases but due to less availability of O_2 partial replacement of aerobic respiration takes place by anaerobic respiration
(2) O_2 requirement decreases hence due to availablity of more O_2 than required
(3) By formation of more organic acids which enter respiration
(4) None of the above

16. R.Q. of germinating seed of castor is
(1) 1 (2) > 1 (3) < 1 (4) 0

17. R.Q. of malic acid is
(1) 0.7 (2) 1 (3) 1.33 (4) 4

18. "Mitchell's chemiosmotic theory" belongs to
(1) Krebs cycle (2) Oxidative phosphorylation
(3) Glycolysis (4) None of the above

19. TPP means
(1) Thiamine pyrophosphate (2) Thymine pyrophosphate
(3) Thymine pentaphosphate (4) None of these

20. Cytochrome is related to
(1) Cellular digestion (2) Protein synthesis (3) Cell division (4) Cellular respiration

21. Which of the following is the phosphorylating unit
(1) Oxysome (2) Mesosome (3) Peroxisome (4) Mitochondria

22. The details of tricarboxylic acid path was worked out by
(1) Meischer (2) Hans krebs (3) Pasteur (4) None of these

23. The number of carbon atom in citric acid is
(1) 8 (2) 6 (3) 10 (4) 2

24. During one Krebs' cycle number of CO_2 molecules released is -
(1) 1 (2) 2 (3) 3 (4) 4

25. FAD is electron acceptor during oxidation of which of the following
(1) α - Ketoglutarate $\rightarrow$ succinyl CoA (2) Succinic acid $\rightarrow$ Fumaric acid
(3) Succinyl CoA $\rightarrow$ succinic acid (4) Fumaric acid $\rightarrow$ malic acid

26. Which one is not correct about Krebs cycle
(1) It is also called citric acid cycle
(2) The intermediate compound which links glycolysis with Krebs cycle is malic acid
(3) It occurs in mitochondria
(4) It starts with six carbon compound

27. Krebs' cycle starts with the formation of six carbon compounds by reaction between
(1) Malic acid and acetyl CoA (2) Succinic acid and pyruvic acid
(3) Fumaric acid and pyruvic acid (4) Acetyl CoA and oxaloacetic acid

28. Food is converted to energy in
(1) Chloroplast (2) Nucleus
(3) Mitochondria (4) None of the above

29. Which of the following is correct sequence in Krebs cycle
(1) Isocitric acid $\rightarrow$ Oxalosuccinic acid $\rightarrow$ α - Ketoglutaric acid
(2) Oxalosuccinic acid $\rightarrow$ Isocitric acid $\rightarrow$ α- Ketoglutaric acid
(3) α - Ketoglutaric acid $\rightarrow$ Isocitric acid $\rightarrow$ Oxalosuccinic acid
(4) Isocitric acid $\rightarrow$ α - Ketoglutaric acid $\rightarrow$ Oxalosuccinic acid

30. Oxidative phosphorylation and photophosphorylation both require the electron carrier
(1) Cytochrome (2) Oxygen (3) Carbon dioxide (4) Water

31. Which of the following energy storing compound is formed when succinyl CoA is converted into succinic acid
(1) ADP (2) ATP (3) AMP (4) GTP

32. The reaction of pentose phosphate pathway (PPP) takes place in
(1) Mitochondrion (2) Cytoplasm
(3) Chloroplast, peroxisome and mitochondrion (4) Chloroplast, glyoxysome and mitochondrion

33. The value of RQ at compensation point is
(1) Unity (2) Infinity (3) > 1 (4) Zero

34. The respiratory quotient during cellular respiration would depend on
(1) The nature of enzymes involved (2) The nature of the substrate
(3) The amount of carbondioxide released (4) The amount of oxygen utilised

35. The correct relationship of value of Respiratory Quotient is
(1) Glucose > Fats > Organic acid (2) Glucose < Fats < Organic acid
(3) Fats > Glucose > Organic acid (4) Fats < Glucose < Organic acid

36. R.Q (respiratory quotient) is defined as
(1) Volume of CO_2 evolved = volume of O_2 consumed

(2) $\frac{\text{Volume of } O_2 \text{ consumed}}{\text{Volume of } CO_2 \text{ evolved}}$

(3) $\frac{\text{Volume of } CO_2 \text{ evolved}}{\text{Volume of } O_2 \text{ consumed}}$

(4) $\frac{\text{Volume of } O_2 \text{ evolved}}{\text{Volume of } CO_2 \text{ consumed}}$

MISCELLANEOUS QUESTIONS

1. The pyruvic acid formed in glycolysis is oxidized to CO_2 and H_2O in a cycle called
(1) Calvin cycle (2) Hill reaction (3) Krebs cycle (4) Nitrogen cycle

2. R.Q. of fatty acids is
(1) 1.5 (2) 0.7 (3) 2.8 (4) 3.2

3. In respiration, which of the following is obtained from glucose $+6O_2$ + 38ADP + 38 ip
(1) 38 ATP (2) 38 AMP (3) 28 ADP (4) 28 AMP

4. RQ of sprouting potato is
(1) 1 (2) > 1 (3) < 1 (4) Zero.

5. Before combining with OAA, pyruvic acid is changed into
(1) Succinic acid (2) Malic acid (3) Acetyl Co-A (4) Citric acid

6. What is the effect on rate of respiration when the amount of CO_2 increases
(1) Respiration will increase (2) Unchanged
(3) Respiration will decrease (4) Firstly increase and finally decrease

7. Ethanol is formed from acetaldehyde by an enzyme called
(1) Lactate dehydrogenase (2) Pyruvate kinase
(3) Alcohol dehydrogenase (4) Pyruvate decarboxylase.

8. Number of ATP molecules produced by each NADH is
(1) 3 (2) 2 (3) 1 (4) 5

9. Ganong's respiroscope is employed for demonstrating
(1) Heat during respiration (2) CO_2 during aerobic respiration
(3) CO_2 during fermentation (4) evolution of oxygen during photosynthesis

10. Pasteur Effect is
(1) Stoppage of fermentation in presence of oxygen
(2) Increase of fermentation in presence of oxygen
(3) Decrease in fermentation in presence of oxygen
(4) No effect on fermentation

11. R.Q. of anaerobic respiration is
(1) Zero (2) infinite (3) 1 (4) > 1

12. Which of the following is an important intermediate formed in all types of respiration
(1) Acetyl Co-A (2) Oxaloacetate (3) Pyruvic acid (4) Tricarboxylic acid

13. During glycolysis the number of ATP molecules utilised to change glucose into fructose 1, 6 bisphosphate are
(1) 4 (2) 3 (3) 2 (4) 1

14. Single turn of cirtic acid cycle yields
(1) 2 $FADH_2$, 2$NADH_2$, 2 GTP (2) 1 $FADH_2$, 2$NADH_2$, 1 GTP
(3) 1 $FADH_2$, 3$NADH_2$, 1 GTP (4) 1 $FADH_2$, 4$NADH_2$, 1 GTP

15. Enzyme used in conversion of glucose into glucose 6-phosphate is
(1) Hexokinase (2) Isomerase (3) phosphokinase (4) Phosphohexokinase.

16. In which of the following substrate level phosphorylation does not occur
(1) 1, 3-biphosphoglyceric acid $\longrightarrow$ 3-phosphoglyceric acid
(2) Glucose 6-phosphate $\longrightarrow$ Fructose 6-phosphate
(3) Succinly Co A $\longrightarrow$ Succinic acid
(4) Phosphoenol pyruvic acid $\longrightarrow$ pyruvic acid

17. RQ of 4, 1 and 0·7 occur in case of
(1) Oxalic acid, carbohydrate and tripalmitin (2) Tripalmitin, malic acid and carbohydrate
(3) Palmitic acid, carbohydrate and oxalic acid (4) Oxalic acid, carbohydrate and malic acid

18. Which is product of oxidative pentose phosphate pathway
(1) Pyruvic acid (2) Acetyl CoA (3) $NADH_2$ (4) NADPH

19. Net gain of ATP molecules per hexose during aerobic respiration is
(1) 12 (2) 18 (3) 30 (4) 36

20. Plastocyanin contains
(1) Copper (2) iron (3) Calcium (4) Potassium

Exercise-2

1. Match the compounds given in Column I with the number of carbon atoms present in them which are listed under Column II. Choose the answer which gives the correct combination of alphabets of the two columns

Column I	**Column II**
(A) Oxaloacetate	(p) 6-C compound
(B) Phosphoglyceraldehyde	(q) 5-C compound
(C) Isocitrate	(r) 4-C compound
(D) α-ketoglutarate	(s) 3-C compound
	(t) 2-C compound

	(A)	(B)	(C)	(D)
(1)	s	t	q	r
(2)	r	s	p	q
(3)	r	t	p	q
(4)	q	s	p	t

2. Production of glucose from amino acids, fatty acids and glycerol is called

(1) Glycogenesis (2) gluconeogenesis

(3) Glycogenolysis (4) Glycolysis

3. Why do fishes in an aquarium thrive better if green plants are growing there because they

(1) Inhale oxygen released by green plants

(2) Inhale carbon dioxide released by green plants

(3) Can feed on them

(4) Like green surrounding

4. In alcohol fermentation

(1) Oxygen is the electron acceptor

(2) $NADH+H^+$ is the electron donor while acetaldehyde is the electron acceptor

(3) Triose phosphate is the electron donor while pyruvic acid is the electron acceptor

(4) There is no electron donor

5. All of the following are four carbon compounds except **(NSEB 2011-2012)**

(1) Malic acid (2) Succinic acid

(3) Pyruvic acid (4) Oxaloacetic acid

6. Hydrogen cyanide causes irreversible inhibition of cytochrome oxidase. If this compound is added to a preparation of intact mitochondria, which of the following would be expected?

(NSEB 2009-2010)

(1) Fall in hydrogenation of molecular oxygen (2) Rise in electrochemical gradient

(3) No change in ATP synthesis (4) Inactivation of ATP synthetase

Exercise-3

PART - I : NEET / AIPMT QUESTION (PREVIOUS YEARS)

1. Two names referring to same thing are **(AIPMT-2003)**
(1) Krebs cycle and Calvin cycle (2) Tricarboxylic acid cycle and citric acid cycle
(3) Citric acid cycle and Calvin cycle (4) Tricarboxlic acid and urea cycle.

2. In glycolysis, during oxidation electrons are removed by **(AIPMT-2004)**
(1) ATP (2) glyceraldehyde-3-phosphate
(3) NAD^+ (4) molecular oxygen

3. Dough kept overnight in warm weather becomes soft and spongy because of **(AIPMT-2004)**
(1) absorption of carbon dioxide from atmosphere
(2) fermentation
(3) cohesion
(4) osmosis

4. Enzyme of TCA which is located in inner mitochondrial membrane in eukaryotes and cytosol in prokaryotes is **(AIPMT-2007)**
(1) Lactate dehydrogenase (2) Malate dehydrogenase
(3) Isocitrate dehydrogenase (4) Succinate dehydrogenase.

5. Overall goal of glycolysis, Krebs cycle and electron transport system is formation of **(AIPMT-2007)**
(1) ATP in small stepwise units (2) ATP in one large oxidation reaction
(3) Sugars (4) Nucleic acid

6. A competitive inhibitor of succinic dehydrogenase is **(AIPMT-2008)**
(1) α-ketoglutarate (2) Malate (3) Malonate (4) Oxaloacetate.

7. Aerobic respiratory pathway is appropriately termed **(AIPMT-2009)**
(1) Anabolic (2) Catabolic (3) Parabolic (4) Amphibolic

8. The energy-releasing metabolic process in which substrate is oxidised without an external electron acceptor is called **(AIPMT-2010)**
(1) Fermentation (2) Aerobic respiration (3) Photorespiration (4) Glycolysis

9. The most common substrate used in distilleries for the production of ethanol is **(Pre. AIPMT-2011)**
(1) Corn meal (2) Soya meal (3) Ground gram (4) Molasses

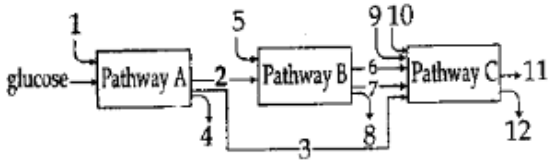
10. Ethanol is commercially produced through a particular species of: **(Pre. AIPMT-2011)**
(1) Saccharomyces (2) Clostridium (3) Trichoderma (4) Aspergillus

11. In mitochondria, protons accumulate in the **(AIPMT Mains-2011)**
(1) Outer membrane (2) Inner membrane
(3) Intermembrane space (4) Matrix

12. Which one of the following is a wrong matching of a microbe and its industrial product, while the remaining three are correct? **(AIPMT Mains-2011)**

(1) Yeast - statins
(2) *Acetobacter aceti* - Acetic acid
(3) *Clostridium butyricum* - lactic acid
(4) *Aspergillus niger* - citric acid

13.# The three boxes in this diagram represents the three major biosynthetic pathways in aerobic respiration and arrows represent net reactants or products. **(NEET-2013)**



Arrows numbered 4, 8 and 12 can all be:

(1) ATP (2) H_2O (3) FAD^+ or $FADH_2$ (4) NADH

14. In which one of the following processes CO_2 is not released? **(AIPMT-2014)**

(1) Aerobic respiration in plants
(2) Aerobic respiration in animals
(3) Alcoholic fermentation
(4) Lactate fermentation

15. Which of the following biomolecules is common to respiration-mediated breakdown of fats, carbohydrates and proteins? **(NEET-2013, NEET-II-2016)**

(1) Acetyl CoA
(2) Glucose-6-phosphate
(3) Fructose 1,6-bisphosphate
(4) Pyruvic acid

16. Oxidative phosphorylation is **(NEET-II-2016)**

(1) formation of ATP by energy released from electrons removed during substrate oxidation
(2) formation of ATP by transfer of phosphate group from a substrate to ADP.
(3) oxidation of phosphate group in ATP
(4) addition of phosphate group to ATP

17. Which statement is wrong for Krebs' cycle ? **(NEET-2017)**

(1) there are three points in the cycle where NAD^+ is reduced to $NADH+H^+$
(2) There is one point in the cycle where FAD^+ is reduced to $FADH_2$
(3) During conversion of succinyl CoA to succinic acid, a molecule of GTP is synthesised
(4) The cycle starts with condensation of acetyl group (acetyl CoA) with pyruvic acid yield citric acid

18._ Which of these statements is **incorrect***?* **(NEET-2018)**

(1) Enzymes of TCA cycle are present in mitochondrial matrix.
(2) Oxidative phosphorylation takes place in outer mitochondrial membrane.
(3) Glycolysis operates as long as it is supplied with NAD^+ that can pick up hydrogen atoms.
(4) Glycolysis occurs in cytosol.

19. What is the role of NAD^+ in cellular respiration? **(NEET-2018)**

(1) It functions as an enzyme.

(2) It is the final electron acceptor for anaerobic respiration.

(3) It is a nucleotide source for ATP synthesis.

(4) It functions as an electron carrier.

20. Conversion of glucose to glucose-6-phosphate, the first irreversible reaction of glycolysis, is catalyzed by : **(NEET-1-2019)**

(1) Phosphofructokinase (2) Aldolase

(3) Hexokinase (4) Enolase

21. Respiratory Quotient (RQ) value of tripalmitin is : **(NEET-1-2019)**

(1) 0.09 (2) 0.9 (3) 0.7 (4) 0.07

22. Which of the following statements regarding mitochondria is incorrect? **(NEET-1-2019)**

(1) Mitochondrial matrix contains single circular DNA molecule and ribosomes.

(2) Outer membrane is permeable to monomers of carbohydrates, fats and proteins.

(3) Enzymes of electron transport are embedded in outer membrane. '

(4) Inner membrane is convoluted with infoldings.

23. Where is the respiratory electron transport system (ETS) located in plants? **(NEET-2-2019)**

(1) Mitochondrial matrix (2) Outer mitochondrial membrane

(3) Inner mitochondrial membrane (4) Intermembrane space

PART - II : AIIMS QUESTION (PREVIOUS YEARS)

1. Which one is the last electron acceptor over ETC in oxidative phosphorylation **(AIIMS-2002)**

(1) H_2 (2) Cyt a_3 (3) Cyt b (4) CO_2

2. Which of the following is the connecting link between glycolysis and Krebs cycle? **(AIIMS-2007)**

(1) acetyl Co-A (2) oxalosuccinic acid (3) pyruvic acid (4) citric acid

3. Which of the following is true regarding the given electron transport chain? **(AIIMS-2009)**

$CoQ \rightarrow$ Cyt c $\rightarrow$ Cyt $aa_3 \rightarrow O_2$

(1) $CoQ \rightarrow$ Cyt c is H^+ absorbing site

(2) $aa_3 \rightarrow O_2$, H^+ yielding site

(3) $CoQ \rightarrow$ Cyt c is H^+ yielding site and $aa_3 \rightarrow O_2$ is H^+ absorbing site

(4) no H^+ is absorbed or released

4. All enzymes of TCA cycle are located in the mitochondrial matrix except one which is located in inner mitochondrial membrane in eukaryotes and in cytosol of prokaryotes. This enzyme is **(AIIMS-2012)**

(1) Succinate dehydrogenase (2) Lactate dehydrogenase

(3) Isocitrate dehydrogenase (4) Malate dehydrogenase

5. In the electron transport chain during terminal oxidation, the cytochrome, which donates electrons to O_2 is **(AIIMS-2012)**

(1) Cytochrome-b (2) Cyt-c (3) Cyt-a_3 (4) Cyt-f

6. $2(C_{51}H_{98}O_6) + 145\ O_2 \rightarrow 102\ CO_2 + 98\ H_2O + Energy$ **(AIIMS-2013)**

The RQ of above reaction is

(1) 1 (2) 0.7 (3) 1.45 (4) 1.62

7. Wine and beer are produced directly by fermentation whereas brandy and whisky require both fermentation and distillation. This is because **(AIIMS-2014)**

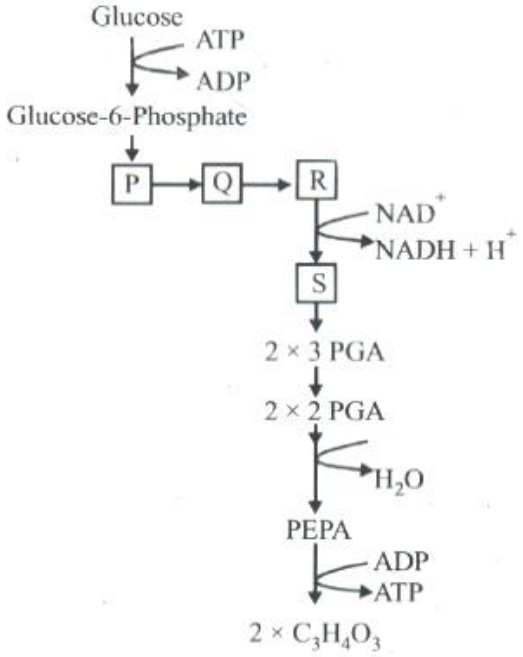
(1) fermentation is inhibited at an alcohol level of 10 – 18%

(2) distillation prolongs storage

(3) distillation improves quality

(4) distillation purifies the beverage

8. Refer the figure and answer the question. **(AIIMS-2015)**



	P	Q	R	S
(1)	1,3 di PGA	3 PGALD	Fr. 1,6 di P	Fr. 6 P
(2)	3 PGALD	1,3 di PGA	Fr. 1,6 di P	Fr. 6 P
(3)	Fr. 1,6 di P	Fr. 6 P	3 PGALD	1,3 di PGA
(4)	Fr. 6 P	Fr. 1,6 di P	3 PGALD	1,3 di PGA

9. The chemiosmotic coupling hypothesis of oxidative phosphorylation proposes that adenosine triphosphate (ATP) is formed because **(AIIMS-2016)**

(1) A proton gradient forms across the inner mitochondrial membrane

(2) There is a change in the permeability of the inner mitochondrial membrane towards adenosine diphosphate (ADP)

(3) High energy bonds are formed in mitochondrial proteins

(4) ADP is pumped out of the matrix into the intermembrane space

10. Which one is correct sequence occuring in glycolysis? **(AIIMS-2017)**

(1) G-6-P $\rightarrow$ PEP $\rightarrow$ 3-PGAL $\rightarrow$ 3-PGA (2) G-6-P$\rightarrow$ 3-PGAL $\rightarrow$ 3-PGA $\rightarrow$ PEP

(3) G-6-P $\rightarrow$PEP $\rightarrow$ 3-PGA $\rightarrow$ 3-PGAL (4) G-6-P $\rightarrow$3-PGA $\rightarrow$ 3-PGAL $\rightarrow$ PEP

11._ Glycolysis is **(AIIMS-I-2018)**

(1) Anaerobic (2) Aerobic

(3) Anaerobic and Aerobic both (4) None

12._ Which is required in glycolysis **(AIIMS-IV-2018)**

(1) ATP, ADP, NAD^+, Glucose, cytoplasmic enzymes

(2) FAD^+, ADP, ATP, Glucose, cytoplasmic enzymes

(3) $NADP^+$, ATP, GTP, Glucose, cytoplasmic enzymes

(4) NAD^+, $NADP^+$, ATP, Glucose, cytoplasmic enzymes

13._ Which is correct link reaction **(AIIMS-IV-2018)**

(1) Pyruvic acid + NAD^+ + Co-A $\xrightarrow[Mg^{++}]{\text{Pyruvate dehydrogenase}}$ Acetyl Co-A + $NADH.H^+$ + CO_2

(2) Pyruvic acid + FAD^+ + Co-A $\xrightarrow[Mg^{++}]{\text{Pyruvate dehydrogenase}}$ Acetyl Co-A + $FADH.H^+$ + CO_2

(3) Pyruvic acid + $NADP^+$ + Co-A $\xrightarrow[Mg^{++}]{\text{Pyruvate dehydrogenase}}$ Acetyl Co-A + $NADPH.H^+$ + CO_2

(4) Pyruvic acid + NAD^+ + Co-A $\xrightarrow[Mg^{++}]{\text{Pyruvate dehydrogenase}}$ Acetyl Co-A + $NADH.H^+$

Answers

EXERCISE - 1

SECTION - A

1.	(4)	**2.**	(4)	**3.**	(3)	**4.**	(3)	**5.**	(3)	**6.**	(3)	**7.**	(2)
8.	(2)	**9.**	(4)	**10.**	(3)	**11.**	(3)	**12.**	(1)	**13.**	(1)	**14.**	(2)
15.	(3)	**16.**	(2)	**17.**	(4)	**18.**	(1)	**19.**	(4)	**20.**	(2)	**21.**	(2)

SECTION - B

1.	(3)	**2.**	(2)	**3.**	(3)	**4.**	(3)	**5.**	(4)	**6.**	(2)	**7.**	(4)
8.	(2)	**9.**	(2)	**10.**	(4)	**11.**	(2)	**12.**	(4)	**13.**	(2)	**14.**	(3)
15.	(1)	**16.**	(3)	**17.**	(3)	**18.**	(2)	**19.**	(1)	**20.**	(4)	**21.**	(1)
22.	(2)	**23.**	(2)	**24.**	(2)	**25.**	(2)	**26.**	(2)	**27.**	(4)	**28.**	(3)
29.	(1)	**30.**	(1)	**31.**	(4)	**32.**	(2)	**33.**	(4)	**34.**	(2)	**35.**	(4)
36.	(3)												

MISCELLANEOUS QUESTIONS

1.	(3)	**2.**	(2)	**3.**	(1)	**4.**	(1)	**5.**	(3)	**6.**	(3)	**7**.	(3)
8.	(1)	**9**.	(2)	**10.**	(1)	**11**.	(2)	**12**.	(3)	**13.**	(3)	**14**.	(3)
15.	(1)	**16.**	(2)	**17**.	(1)	**18**.	(4)	**19.**	(4)	**20.**	(1)		

EXERCISE - 2

1.	(2)	**2.**	(2)	**3.**	(1)	**4.**	(2)	**5.**	(3)	**6.**	(1)

EXERCISE - 3

PART- I

1.	(2)	**2.**	(3)	**3.**	(2)	**4.**	(4)	**5.**	(1)	**6.**	(3)	**7.**	(4)
8.	(1)	**9.**	(4)	**10.**	(1)	**11.**	(3)	**12.**	(3)	**13.**	(1)	**14.**	(4)
15.	(1)	**16.**	(1)	**17.**	(4)	**18.**	(2)	**19.**	(4)				
20.	(3)	**21.**	(3)	**22.**	(3)	**23.**	(3)						

PART- II

1.	(2)	**2.**	(1)	**3.**	(3)	**4.**	(1)	**5.**	(3)	**6.**	(2)	**7.**	(1)
8.	(4)	**9.**	(1)	**10.**	(2)	**11.**	(1)	**12.**	(1)	**13.**	(1)		