PREVIOUS QUESTIONS XI 2012-2024 : *Chapter 8 - Respiration in Plants*

1Mark Questions

1. Aerobic respiration and anaerobic respiration starts with a common pathway. Identify the pathway and its end product. *2012 Imp.*
2. Anaerobic respiration is also occurs in animal cells. Suggest an occasion for this. *2014 March*
3. Out of the four statements given below related to respiration, the correct statements are;
   i) Though respiration has traditionally been considered as a catabolic process, it would be better to consider it as an amphibolic pathway.
   ii) In muscles when oxygen is inadequate, lactic acid is reduced to pyruvic acid.
   iii) When fats are used in respiration, the RQ is greater than one.
   iv) In respiration, the energy of oxydation-reduction is utilised for phosphorylation.
   a) i) and ii) b) ii) and iii)
   c) iii) and iv) d) i) and iv) *2015 March*
4. Fill in the blank.
   The number of carbon atoms in Acetyl co-enzyme A, which take part in Kreb's cycle is _____. *2020 March*
5. Fill in the blank.
   The process of breakdown of glucose to pyruvic acid is called _____. *2022 Model*
6. Name the process which is common for both aerobic and anaerobic respiration. *2022 June*
7. Fill in the blank:
   The end product of Glycolysis is_____ *2022 Imp*
8. Complete oxidation of organic substance in the presence of oxygen is_____ *2023 Model*
9. Choose the correct answer:
   The R.Q. (Respiratory Quotient) of carbohydrate is ____
   (0.9,1,0,0.7) *2023 March*

2Marks Questions

1. Analyze the given statements and correct them with respect to the underlined words.
   (a) Respiration is an anabolic pathway.
   ~~(b) The site of percepton of light by a plant for a photoperodic response is a flower.~~
   (Chapter 11) *2013 March*
2. Mention the fate of pyruvic acid in respiration.
   (Hint : Any two points) *2015 Imp.*
3. The following compounds are intermediates in Glycolysis or in Kreb's cycle. Write them in the proper column of the table.
   Fructose - 6 - phosphate, Citric acid, Phospho enol pyruvate, Malic acid.

Glycolysis	Kreb's cycle

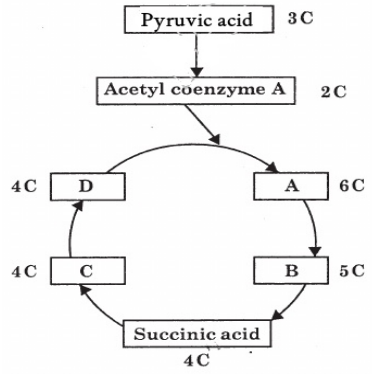
2015 Imp.

4. "Respiration is an amphiboic pathway". Evaluate the statement. *2016 March*
5. Fermentation is the incomplete oxidation of pyruvic acid. Find the difference between two types of fermentations in microorganisms. *2016 March*
6. Match the following.

A		B	
a)	Somatal closure	i)	Cytoplasm
b)	Citric acid	ii)	Plasticity
c)	Glycolysis	iii)	Ethylene
d)	Heterophilly	iv)	Kreb's cycle
		v)	ABA

2016 Imp.

7. Glycolysis is the common phase in both aerobic and anaerobic respiration. Where does it take place and what is the end product of glycolysis? *2017 Imp.*
8. The figure showing the pathway of Tricarboxylic acid cycle is given below. Name the compound present in the position of A, B, C and D.



2017 Imp.

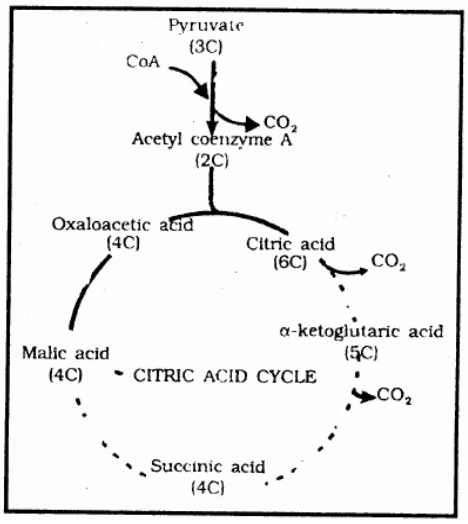
9. Carbohydrates and fats are respiratory substrates. But their RQ is different. Define RQ. Write the RQ of these substrates. *2018 Model*

10.Certain compounds formed during Kreb's cycle are given below. Draw Kreb's cycle using the compounds.

Succinic acid, Acetyl CoA, α-Ketoglutaric acid, Oxaloacetic acid, Malic acid, Citric acid

2018 Model

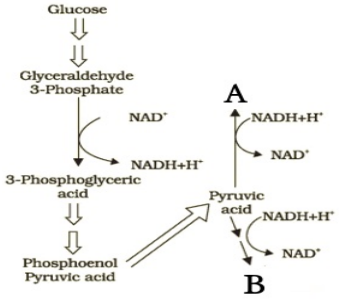
11.Following figure shows the citric acid cycle.



Identify the steps where FADH and GTP are synthesized. *2018 March*

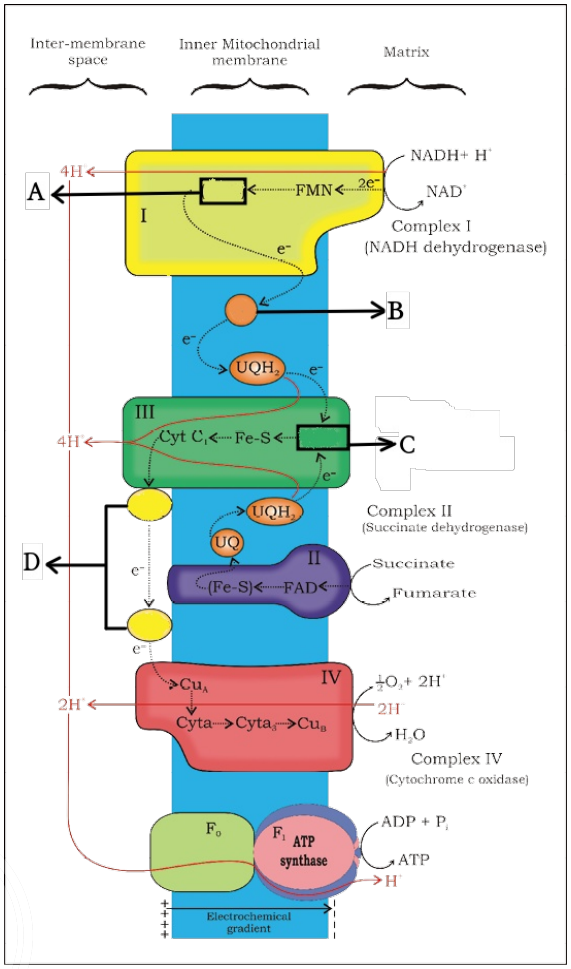
12.The breakdown of glucose to pyruvic acid is called glycolysis. Where does it occur in a cell? How many ATP molecules are directly synthesized during this process? *2018 March*

13.Observe the following pathways of anaerobic respiration.



Identify the products A and B. Give an example of organism in which any of these products are formed. *2018 Imp.*

14.Observe the figure given below.

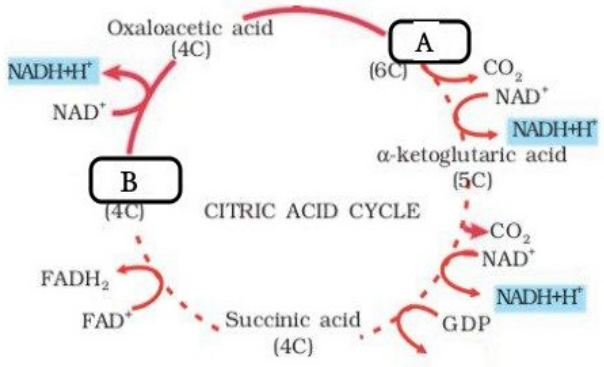


Fill in the blanks A, B, C and D with appropriate terms from the box given below.

Cyt c, Cyt b, FeS, UQ

2018 Imp.

15.Observe the schematic representation of Kreb's cycle given below.



(a) Fill in the blanks A, B.

(b) Write down the step where substrate level phosphorylation occur in Kreb's cycle. *2019 Model*

16.Observe the equation showing oxidative decarboxylation of pyruvic acid.

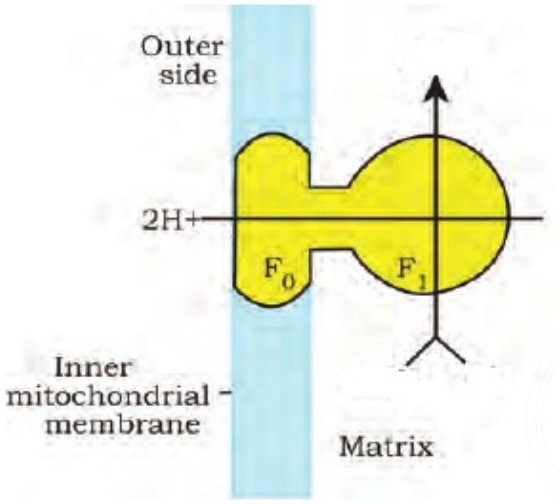
$$\text{Pyruvic acid} + \text{CoA} + \text{NAD} \xrightarrow[\text{A}]{Mg^{2+}} \text{Acetyl CoA} + CO_2 + \text{NADH} + H^+$$

(a) Name the enzyme labelled as "A"

(b) Where does this reaction takes place in cells? *2019 Model*

17.Write any two differences between aerobic respiration and anaerobic respiration. *2019 March*

18.Observe the figure given below.



Name the complex. Write its function. *2019 March*

19."There are several reasons why plants can get along without respiratory organs."
Justify the above statement by citing two reasons. *2019 Imp.*

20.Glycolysis is the breakdown of glucose into pyruvic acid.

(a) Where does glycolysis occur in a cell ?

(b) Why is glycolysis a partial oxidation ? *2019 Imp.*

21.Differentiate lactic acid fermentation from alcohol fermentation. *2020 Model*

22.In glycolysis, ATP is utilized at two steps only. Write down these two steps. *2020 Model*

23.The first step in respiration is glycolysis.

(a) Define glycolysis.

(b) Write the site of glycolysis. *2020 March*

24.Aerobic respiration and anaerobic respiration are two types of respiration.

(a) What is anaerobic respiration?

(b) Write the change that occurs to pyruvic acid in yeast cells. *2020 March*

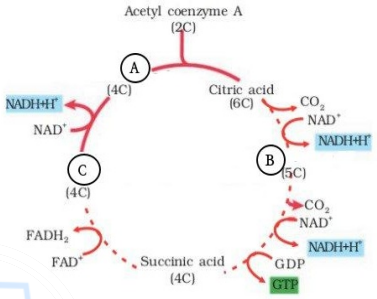
25.Observe the equation given below:

$$C_6H_{12}O_6 + 6O_2 \quad 6CO_2 + 6H_2O + \text{Energy}$$

(a) Calculate the respitatory quotient of Glucose from the equation.

(b) What is respiratory substrate? *2020 March*

26.Observe the illustration given below and answer the following questions.



(a) Identify the cyclic pathway.

(b) Write the name of intermediate compounds marked as A, B & C. *2020 Imp.*

27.(a) What is fermentation ?

(b) Which are the main products produced as a result of fermentation in (i) Yeast, (ii) Muscles? *2021 Model*

28.Name the products obtained from anaerobic respiration by Yeast. *2021 Sept.*

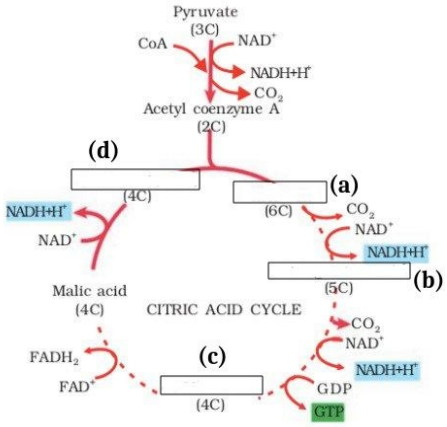
29.Glycolysis is common in aerobic and anerobic respiration.

(a) What is Glycolysis ?

(b) Where does Glycolysis take place ? *2021 Imp.*

30.Observe the figure of citric acid cycle given below.

Identify (a), (b), (c) and (d) in the figure.



2022 Model

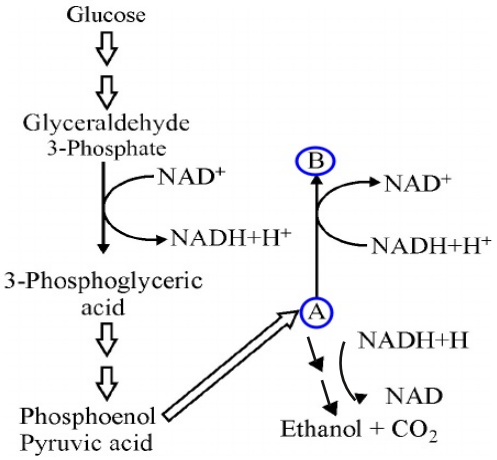
31.Define Respiratory Quotient. Write the RQ value of Carbohydrate. *2022 June*

32.(a) Define fermentation.
(b) What is the end product of fermentation in muscles *2022 Imp*

33.Fermentation is the incomplete oxidation of pyruvic acid. Find the difference between two types of fermentation in micro-organisms. *2023 Model*

34.The first step in respiration is glycolysis.
(A) Define glycolysis.
(B) Write the site of glycolysis in a cell.
(C) Enzyme responsible for conversion of glucose to glucose-6-phosphate. *2023 March*

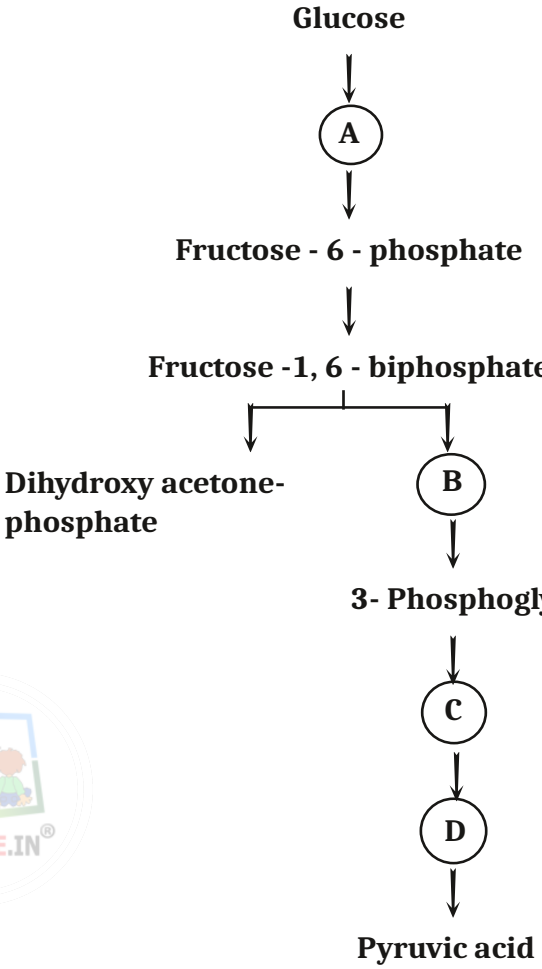
35.(a) Observe the figure and label A & B.
(b) The maximum concentration of alcohol in naturally fermented beverages is 13%. Give reason. *2023 Imp*



36. a) What are respiratory substrates?
b) Name the most common respiratory substrate *2024 Model*

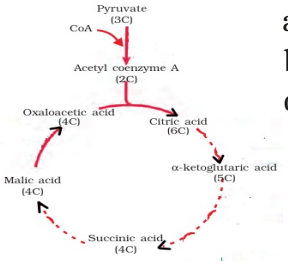
3Marks Questions

1. Observe the incomplete schematic representation given below and answer the questions.



a) Identify this pathway common for both aerobic and anaerobic respiration
b) Complete the scheme by filling the boxes A, B, C and D
c) Mention the three ways in which different cells handle pyruvic acid produced by this pathway *2012 March*

2. Observe the illustration given below and answer the following questions.



a) Identify the cyclic pathway.
b) Where does it occur?
c) Identify the steps of this pathway in which decarboxylation takes place. *2012 Imp.*

3. Breakdown of glucose in respiration is listed under glycolysis and Kreb's cycle.
a) Locate the site of glycolysis and Kreb's cycle in the cell.
b) Glycolysis is a partial oxidation process. Justify. *2013 March*

4. Glycolysis is present in all organisms and it is the only process of respiration in anaerobic organisms.
   a) What is glycolysis?
   b) Where does glycolysis occur?
   c) Glycolysis is a partial oxydation. Justify.
   d) Calculate the total number of ATP molecules synthesised in glycolysis by the partial oxidation of one molecule of glucose. *2014 March*

5. Two crucial events of aerobic respiration takes place in two parts of mitochondria. Locate the two parts and mention the two events in one or two sentences each. *2015 March*

6. "There are several reasons why plants can get along without respiratory organs"
   Justify the statement giving three reasons. *2016 Imp.*

7. Fill up the flow chart of glycolysis given below using the list of intermediary compounds given in the bracket.

Glucose
↓
.....
↓
Fructose - 6 - phosphate
↓
.....
↓
Gyceraldehyde - 3 - phosphate ⇌ DHAP
↓
.....
↓
3 Phosphoglyceric acid
↓
.....
↓
.....
↓
.....

(Phosphoenol pyruvic acid, Glucose - 6 - phosphate, Pyruvic acid, Fructose -1,6 - biphosphate, 2 Phosphoglyceric acid, 1,3 Biphosphoglyceric acid)

2016 Imp.

8. (a) What is Respiratory Quotient (RQ) ?
   (b) Write the RQ of (i) Carbohydrate, (ii) Fat. *2021 Model*

9. (a) Name the process which is common for Aerobic and Anaerobic respiration.
   (b) Write the site of this process in cell.
   (c) Write the name of the end product of this process. *2021 Model*

10. What are the differences between aerobic respiration and anaerobic respiration ? *2021 Sept.*

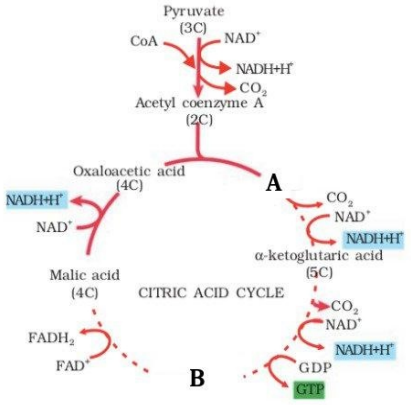
11. The respiratory quotient depends upon the type of substrate used during respiration.
   (a) Define RQ (Respiratory quotient)
   (b) What is the RQ of carbohydrate during respiration ? *2021 Sept.*

12. Differentiate between aerobic and anaerobic respiration.
   What are the end products obtained during anaerobic respiration of glucose in yeast cells ? *2021 Imp.*

13. What are respiratory substrates ? Name any two substances used as respiratory substrate in plants. *2021 Imp.*

14. Give any three differences between aerobic respiration and fermentation. *2022 Model*

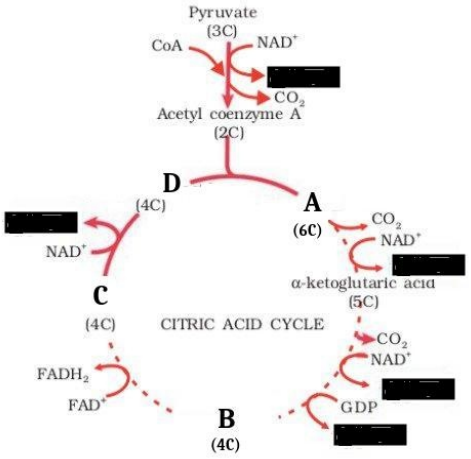
15. Given below is the schematic representation of tricarboxylic acid cycle in respiration.



   (a) Identify and write the compounds A and B in the cycle.
   (b) Name the scientist who first elucidated the cycle.
   (c) Where does tricarboxylic cycle occur? *2022 June*

16.(a) Identify and name the process given in the figure.

(b) Write the name of compounds marked as A, B, C and D.

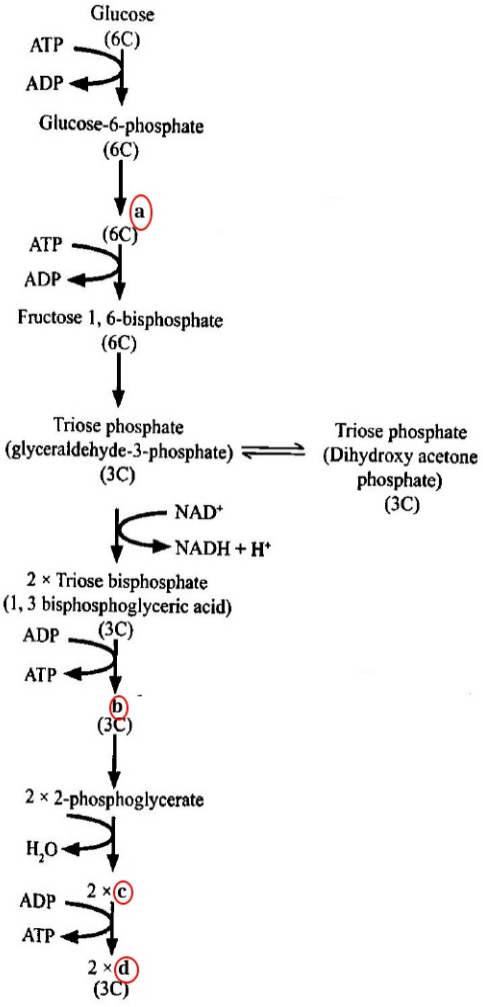


2022 Imp

17.Glycolysis is the partial oxidation of glucose to produce 2 molecules of pyruvic acid.

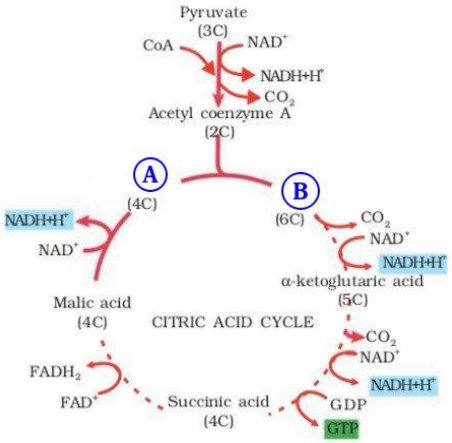
a) Where does glycolysis occur?

b) Steps of glycolysis are given below. Write the name of compounds marked as (a), (b), (c) and (d)



2023 Model

18.Observe the figure given below and answer the following questions.



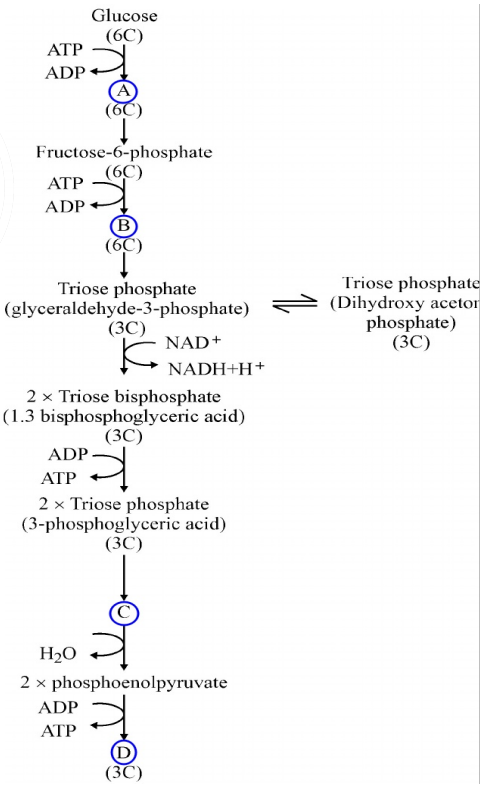
(i) Write the name of this cycle.

(ii) Identify A & B in the cycle. *2023 March*

19. Steps of glycolysis is given below :

(a) Write the name of compounds marked as A, B, C and D.

(b) Where does Glycolysis occur in a cell ? *2023 Imp*

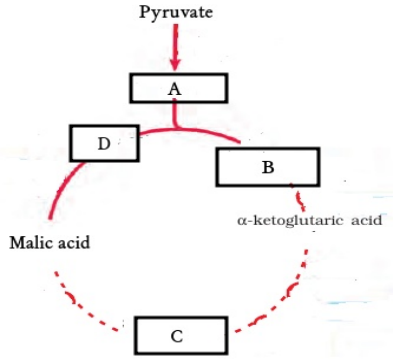


20. a) What is meant by respiratory quotient?

b) How much is the RQ of carbohydate which is used as substrate? *2024 Model*

4 Marks Questions

1. Observe the given figure and answer the questions.



   a) Identify the cycle and name the scientist who traced the pathway.
   b) Complete the cycle by filling A, B, C & D in the boxes.
   c) How many NADH and FADH2 are yielded during the complete oxidation of one molecule of pyruvate by this pathway?

2012 March

2. Oxidative phosphorylation is an important event in cellular respiration.
   a) Which organelle is associated with this process?
   b) Name the phase of cellular respiration that is common to both aerobic and anaerobic condtion
   c) Draw the schematic representation of that phase.

2013 March

3. During terminal oxidation, electrons in the hydrogen atoms are transported to the oxygen through a series of electron carriers in ETS. The electron carriers are given below;

   FMN, FAD, Ubiquinone, FeS, cyt a, cyt b, cyt c, cyt a_3 etc.

   a) Briefly explain ETS with schematic representation.
   b) Where does ETS occur?

2013 March

4. Various compounds in the citric acid cycle are given below:

   (Oxaloacetic acid, Citric acid, Succinyl CoA, Pyruvate, Acetyl CoA, Malic acid, α-ketoglutaric acid, Succinic acid)

   a) Arrange them in order and draw a complete cycle
   b) Who traced this cycle?
   c) Where does it take place?

2014 Imp.

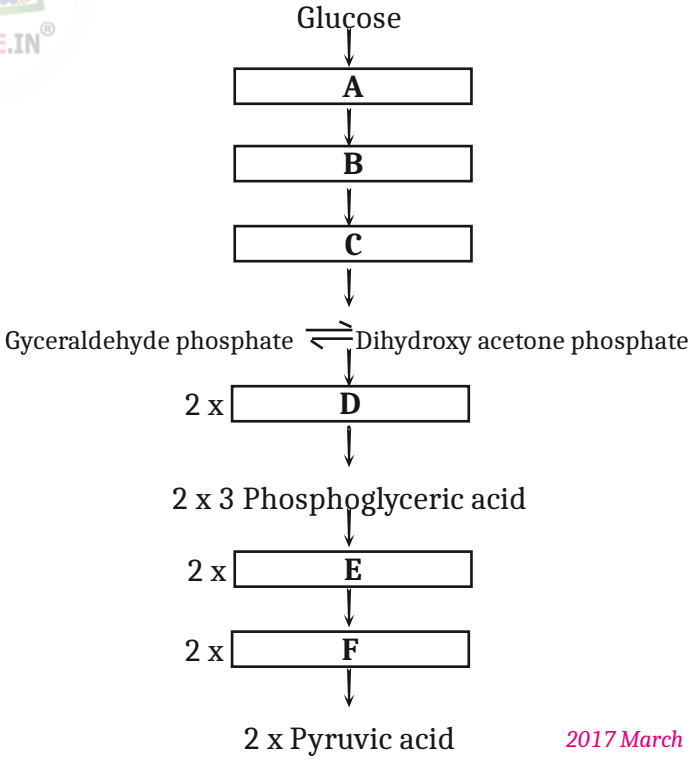
5. The metabolic pathway through which electrons pass from one eletron carrier to another is called electron transport system. Some electron acceptors are given below:

   (FeS, Cyt b, FMN, FAD, Cyt a, NADH, Ubiquinone, Cyt c, Cyt a_3, H_2O)

   a) Arrange them in the correct order
   b) Name the site of ETS
   c) What is the role of O_2 in ETS?

2014 Imp.

6. Glycolysis is the partial oxydation of glucose to produce two molecules of pyruvic acid.
   a) Where does gycolysis occur?
   b) Steps of glycolysis are given below. Fill up the blank boxes.



2017 March

7. The complete oxidation of pyruvic acid yields three molecules of CO_2 by a cyclic process in the matrix of mitochondria.
   a) Who first develop this cycle?
   b) Draw a diagrammatic sketch of the identified cycle.

2017 March

1Mark Questions

1. Glycolysis. Pyruvic acid
2. In muscles during exercise, when oxygen is inadequate for cellular respiration pyruvic acid is reduced to lactic acid by lactate dehydrogenase.
3. d) i) and iv)
4. Two
5. Glycolysis
6. Glycolysis
7. Pyruvic acid
8. Aerobic respiration
9. 1

2Marks Questions

1. (a) Amphibolic process
2. Pyruvic acid may anaerobically undergo Lactic acid fermentation or Alcohol fermentation or it may enter aerobic respiration using oxygen
3.

Glycolysis	Kreb's cycle
Fructose - 6 - phosphate Phospho enol pyruvate	Citric acid Malic acid

4. Respiration involves both catabolic and anabolic processes. Molecules in the respiratory pathway may be withdrawn and used to synthesise other compounds and vice versa based on the requirement of the cell.
5. Lactic acid fermentation : Pyruvic acid is converted to Lactic acid with the help of pyruvic acid decarboxylase.
   Alcohol fermentation : Pyruvic acid is converted to Ethyl alcohol and CO_2 with the help of alcohol dehydrogenase.
6.

A		B	
a)	Somatal closure	v)	ABA
b)	Citric acid	iv)	Kreb's cycle
c)	Glycolysis	i)	Cytoplasm
d)	Heterophilly	ii)	Plasticity

7. Cytoplasm. Pyruvic acid
8. A. Citric acid B. α-ketoglutaric acid
   C. Malic acid D. Oxaloacetic acid
9. The ratio of the volume of CO_2 evolved to the volume of O_2 consumed in respiration is called the respiratory quotient (RQ)
   Carbohydrates : 1 Fats : less than 1
10. *Diagram- refer text*
11. During the conversion of succinyl-CoA to succinic acid a molecule of GTP is synthesised. During the conversion of succinic acid to Malic acid $FADH_2$ is formed.
12. Cytoplasm. 4 ATP
13. A. Lactic acid - Eg.Lactic acid bacteria
    B. Ethyl alcohol and CO_2- Yeast
14. A. FeS B. UQ C. Cyt b D. Cyt c
15. (a) A. Citric acid B. Malic acid
    (b) During the conversion of succinyl-CoA to succinic acid a molecule of GTP is synthesised.
16. (a) Pyruvate dehydrogenase
    (b) Mitochondrial matrix
17.

Aerobic respiration	Anaerobic respiration
Need O_2 In cytoplasm & mitochondria. Complete oxidation. High energy output-36 ATP. End products CO_2 and water. ***(any 2)***	Without O_2 In cytoplasm only. Incomplete oxidation. Low energy output - 2ATP. End products Lactic acid or Ethyl alcohol. ***(any 2)***

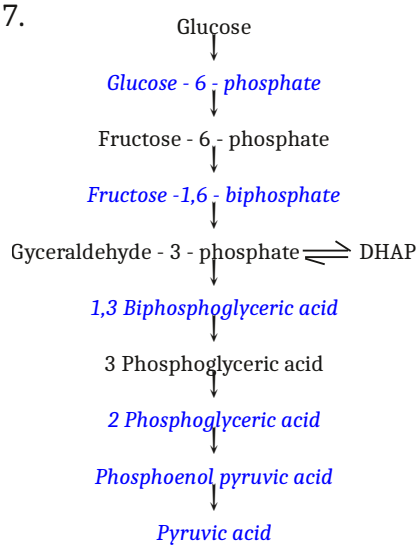
18. Complex V (ATP synthase)
    ATP Synthesis
19. Each plant part takes care of its own gas-exchange needs, plants do not present great demands for gas exchange, distance that gases must diffuse even in large, bulky plants is not great, lenticel and stomata facilitate gaseous exchange ***(any 2)***
20. (a) Cytoplasm
    (b) Glucose is broken down partially into two molecules of pyruvic acid.
21. Lactic acid fermentation : Pyruvic acid is converted to Lactic acid with the help of pyruvic acid decarboxylase.
    Alcohol fermentation : Pyruvic acid is converted to Ethyl alcohol and CO_2 with the help of alcohol dehydrogenase.
22. 1. Glucose ➡ Glucose-6-phosphate
    2. Fructose-6-phosphate ➡ Fructose1, 6-bisphosphate

23. (a) Glycolysis is the partial oxidation of Glucose into two molecules of Pyruvic acid
(b) Cytoplasm
24. (a) It is the incomplete break down of pyruvic acid anaerobically.
(b) In Yeast pyruvic acid undergoes alcohol fermentation and form Ethyl alcohol and CO_2
25. (a) RQ = 6/6 =1
(b) Respiratory substrate is the compound that undergoes respiraton.
26. (a) Krebs' cycle/Tricarboxylic Acid Cycle/Citric acid cycle
(b) A. Oxaloacetic acid B. α-ketoglutaric acid
C. Malic acid
27. (a) Fermentation is the incomplete oxidation of glucose under anaerobic conditions.
(b) (i) Ethyl alcohol and CO_2 (ii) Lactic acid
28. Ethyl alcohol and CO_2
29. (a) Glycolysis is the partial oxidation of Glucose into two molecules of Pyruvic acid
(b) Cytoplasm
30. (a) Citric acid (b) α-ketoglutaric acid
(c) Succinic acid (d) Oxaloacetic acid
31. The ratio of the volume of CO_2 evolved to the volume of O_2 consumed in respiration is called the respiratory quotient (RQ)
RQ of Carbohydrates : 1
32. (a) Fermentation is the incomplete oxidation of glucose under anaerobic conditions.
(b) Lactic acid
33. Lactic acid fermentation : Pyruvic acid is converted to Lactic acid with the help of pyruvic acid decarboxylase.
Alcohol fermentation : Pyruvic acid is converted to Ethyl alcohol and CO_2 with the help of alcohol dehydrogenase.
34. (A) Glycolysis is the partial oxidation of Glucose into two molecules of Pyruvic acid
(B) Cytoplasm
(C) Hexokinase
35. (a) A. Pyruvic acid B. Lactic acid
(b) Yeasts poison themselves to death when the concentration of alcohol reaches about 13 percent.
36. (a) Respiratory substrate is the compound that undergoes respiraton.
(b) Carbohydrates

3Marks Questions

1. a) Glycolysis
b) A. Glucose-6-phosphate
B. 3-phosphoglyceraldehyde (PGAL)/ Glyceraldehyde-3-phosphate
C. 2-phosphoglyceric acid
D. Phosphoenolpyruvic acid
c) Aerobic respiration, Lactic acid fermentation, Alcohol fermentation
2. a) Krebs' cycle/Tricarboxylic Acid Cycle/Citric acid cycle
b) Mitochondrial matrix
c) 1. Pyruvate to Acetyl coenzyme A
2. Citric acid to α-ketoglutaric acid
3. α-ketoglutaric acid to Succinic acid
3. a) Glycolysis - Cytoplasm
Krebs' cycle - Mitochondrial matrix
b) Glucose is broken down incompletely into two molecules of pyruvic acid.
4. a) Glycolysis is the partial oxidation of Glucose into two molecules of Pyruvic acid
b) Cytoplasm
c) Glucose is broken down incompletely into two molecules of pyruvic acid.
d) 4
5. Mitochondrial matrix - Kreb's cycle
Inner mitochondrial membrane - electron transport system (ETS)
Krebs' cycle : It is the step by step breakdown of Pyruvic acid forming NADH+H +, $FADH_2$, ATP and CO_2
Electron transport system (ETS) : NADH+H + and $FADH_2$ are oxidised through the electron transport system and the electrons are passed on to O_2 resulting in the formation of H_2O. During the electron transport, ATP is synthesised
6. Each plant part takes care of its own gas-exchange needs, plants do not present great demands for gas exchange, distance that gases must diffuse even in large, bulky plants is not great, lenticel and stomata facilitate gaseous exchange ***(any 3)***

7.



8. (a) The ratio of the volume of CO_2 evolved to the volume of O_2 consumed in respiration is called the respiratory quotient (RQ)
   (b) Carbohydrates : 1 Fat : less than 1
9. (a) Glycolysis
   (b) Cytoplasm
   (c) Pyruvic acid
10.

Aerobic respiration	Anaerobic respiration
Need O_2 In cytoplasm & mitochondria. Complete oxidation. High energy output-36 ATP. End products CO_2 and water.	Without O_2 In cytoplasm only. Incomplete oxidation. Low energy output - 2ATP. End products Lactic acid or Ethyl alcohol.

11. (a) The ratio of the volume of CO_2 evolved to the volume of O_2 consumed in respiration is called the respiratory quotient (RQ)
    (b) Carbohydrate : 1
12.

Aerobic respiration	Anaerobic respiration
Need O_2 In cytoplasm & mitochondria. Complete oxidation. High energy output-36 ATP. End products CO_2 and water.	Without O_2 In cytoplasm only. Incomplete oxidation. Low energy output - 2ATP. End products Lactic acid or Ethyl alcohol.

    End products of yeast fermentation are Ethyl alcohol and CO_2
13. Respiratory substrate is the compound that undergoes respiraton.
    Carbohydrates/Proteins/Fats ***(any 2)***
14.

Aerobic respiration	Anaerobic respiration
Need O_2 In cytoplasm & mitochondria. Complete oxidation. High energy output-36 ATP. End products CO_2 and water. ***(any 3)***	Without O_2 In cytoplasm only. Incomplete oxidation. Low energy output - 2ATP. End products Lactic acid or Ethyl alcohol. ***(any 3)***

15. (a) A. Citric acid B. Succinic acd
    (b) Hans Krebs
    (c) Mitochondrial matrix
16. (a) Krebs' cycle/Tricarboxylic Acid Cycle/Citric acid cycle
    (b) A. Citric acid B. Succinic acd
    C. Malic acid D. Oxaloacetic acid
17. a) Cytoplasm
    b) (a) Fructose-6-phosphate
    (b) 3-phosphoglyceric acid
    (c) Phosphoenolpyruvic acid
    (d) Pyruvic acid
18. (i) Krebs' cycle/Tricarboxylic Acid Cycle/Citric acid cycle
    (ii) A. Oxaloacetic acid B. Citric acid
19. (a) A. Glucose-6-phosphate
    B. Fructose1, 6-bisphosphate
    C. 2-phosphoglyceric acid
    D. Pyruvic acid
    (b) Cytoplasm
20. a) The ratio of the volume of CO_2 evolved to the volume of O_2 consumed in respiration is called the respiratory quotient (RQ)
    b) Carbohydrate : 1

4 Marks Questions

1. a) Krebs' cycle/Tricarboxylic Acid Cycle/Citric acid cycle
   Hans Krebs
   b) A. Acetyl coenzyme A B. Citric acid
   C. Succinic acd D. Oxaloacetic acid
   c) NADH - 8 $FADH_2$ - 2

2. a) Mitochondria b) Glycolysis
   c) *Diagram - refer text*
3. a) Electrons from NADH produced in the mitochondrial matrix during citric acid cycle are oxidised by an NADH dehydrogenase (complex I), and electrons are then transferred to ubiquinone located within the inner membrane. Ubiquinone also receives reducing equivalents via $FADH_2$ (complex II) that is generated during oxidation of succinate in the citric acid cycle. The reduced ubiquinone (ubiquinol) is then oxidised with the transfer of electrons to cytochrome c via cytochrome bc_1 complex (complex III). Cytochrome c acts as a mobile carrier for transfer of electrons between complex III and IV. Complex IV refers to cytochrome c oxidase complex containing cytochromes a and a_3 . When the electrons pass from one carrier to another via complex I to IV in the electron transport chain, they are coupled to ATP synthase (complex V) for the production of ATP from ADP and inorganic phosphate.
   for Diagram - refer text
   b) Inner mitochondrial membrane
4. a) Pyruvate, Acetyl CoA, Citric acid, α-ketoglutaric acid, Succinyl CoA, Succinic acid, Malic acid, Oxaloacetic acid .
   for Diagram - refer text
   b) Hans Krebs
   c) Mitochondrial matrix
5. a) NADH, FMN, FeS, Ubiquinone, Cyt b, FAD, Cyt c, Cyt a, Cyt a_3, H_2O
   b) Inner mitochondrial membrane
   c) Oxygen acts as the final hydrogen acceptor.
6. a) Cytoplasm
   b) A. Glucose-6-phosphate
      B. Fructose-6-phosphate
      C. Fructose1, 6-bisphosphate
      D. 1,3 bisphosphoglyceric acid
      E. 2-phosphoglyceric acid
      F. Phosphoenolpyruvic acid
7. a) Hans Krebs
   b) *for Diagram - refer text*