BIOLOGY

BOOKS - CHETANA BIOLOGY (MARATHI ENGLISH)

Respiration and Energy Transfer

Example

1. Define respiration

Watch Video Solution

2. Give the overall equation of respiration.

Watch Video Solution

3. Define anaerobic respiration.

Watch Video Solution

4. Give the overall equation of aerobic respiration.

Watch Video Solution

5. Define anaerobic respiration.

Watch Video Solution

6. Give the overall equation of anaerobic respiration.

Watch Video Solution

7. Maintenance of life requires continuous energy.

Watch Video Solution

8. Respiration is a redox reaction'. Explain.

Watch Video Solution

9. Why do organisms take up oxygen and release carbondioxide?

Watch Video Solution

10. Maintenance of life requires continuous energy.

Watch Video Solution

11. What is ATP?

Watch Video Solution

12. Write a short note on ATP.

Watch Video Solution

13. How is ATP formed.

Watch Video Solution

14. How is ATP formed.

Watch Video Solution

15. How do organisms meet their energy requirement?

Watch Video Solution

16. Enlist the functions of ATP.

Watch Video Solution

17. What is the role of ATP.

Watch Video Solution

18. What are respiratory substrates?

19. Mention the different types of respiratory substrates.

20. What are respiratory substrates?

Watch Video Solution

21. Which of the following is common respiratory substrate/ main fuel for respiration

Watch Video Solution

22. Why is glucose the most preferred respiratory susbtrate?

Watch Video Solution

23. Which nutrients are used for energy production?

Watch Video Solution

24. Why is glucose the most preferred respiratory susbtrate?

Watch Video Solution

25. Write a note on mechanism of respiration.

Watch Video Solution

26. Write a note on mechanism of respiration.

Watch Video Solution

27. Define anaerobic respiration.

Watch Video Solution

28. What do you understand by anaerobic respiration?

Watch Video Solution

29. Describe the mechanism of anaerobic respiration.

Watch Video Solution

30. Why is less energy produced during anaerobic respiration than in aerobic respiration?

Watch Video Solution

31. Define glycolysis.

Watch Video Solution

32. What is glycolysis? Explain briefly.

Watch Video Solution

33. With the help of a schematic representation describe glycolysis.

Watch Video Solution

34. Describe the EMP pathway.

Watch Video Solution

35. Common step of aerobic and anaerobic respiration.

Watch Video Solution

36. One molecule of glucose forms two molecules of pyruvate'. Explain.

Watch Video Solution

37. Write explanatory notes on:

Glycolysis

Watch Video Solution

38. During which steps of glycolysis is ATP synthesized?

Watch Video Solution

39. During which steps is/are ATP consumed during glycolysis?

Watch Video Solution

40. Give the overall equation for glycolysis.

Watch Video Solution

41. How is control maintained over the rate of glycolysis.

Watch Video Solution

42. Write a note on the significance of glycolysis.

Watch Video Solution

43. Give the balance sheet of glycolysis.

Watch Video Solution

44. Net gain of ATP at the end of glycolysis is 8 molecules'. Justify.

Watch Video Solution

45. Why is glycolysis considered as biochemical proof of evolution?

Watch Video Solution

46. Why some reactions of glycolysis are reversible and some irreversible.

Watch Video Solution

47. The only source of energy production in erythrocytes is glycolysis. Comment.

Watch Video Solution

48. Define fermentation.

Watch Video Solution

49. Write short note on Fragmentation.

Watch Video Solution

50. What is the fate of pyruvate in anaerobic conditions.

Watch Video Solution

51. Define alcoholic fermentation.

Watch Video Solution

52. Write a short note on alcoholic fermentation.

Watch Video Solution

53. Write explanatory notes on fermentation by yeast.

Watch Video Solution

54. Define alcoholic fermentation.

Watch Video Solution

55. Give the overall equation of alcoholic fermentation.

Watch Video Solution

56. Define lactic acid fermentation.

Watch Video Solution

57. Describe the mechanism of lactic acid fermentation.

Watch Video Solution

58. Define lactic acid fermentation.

Watch Video Solution

59. Give the overall equation of lactic acid fermentation.

Watch Video Solution

60. When and where does anaerobic respiration occur in man and yeast?

Watch Video Solution

61. Red muscle fibres in animals can work continuously for long periods of time'. Discuss.

Watch Video Solution

62. Why are certain athletes better than others at running marathons?

Watch Video Solution

63. Why do athletes like sprinters have a higher proportion of white muscle fibre?

Watch Video Solution

64. A man jogs 10 kms daily. However one day he experiences cramping in the muscles of his left leg'. Why do you think this occurred?

Watch Video Solution

65. A man jogs 10 kms daily. However one day he experiences cramping in the muscles of his left leg'. Why do you think this occurred?

Watch Video Solution

66. Yeast is used in a brewery. Would the finished products from the brewery contain yeast? Explain.

Watch Video Solution

67. Enlist the products of fermentation.

Watch Video Solution

68. Write a note on the significance of fermentation.

Watch Video Solution

69. Define anaerobic respiration.

Watch Video Solution

70. What do you understand by anaerobic respiration?

Watch Video Solution

71. Give a brief outline of the phases of aerobic respiration.

Watch Video Solution

72. What are the main steps of aerobic respiration? Where do they take place?

Watch Video Solution

73. Two steps of anaerobic respiration

Watch Video Solution

74. State the connecting link between EMP pathway & Kreb's cycle.

Watch Video Solution

75. Describe acetylation of respiration.

Watch Video Solution

76. Explain how oxidative decarboxylation of pyruvic acid takes place.

Watch Video Solution

77. What is aerobic oxidation of pyruvic acid? Why does it take place.

Watch Video Solution

78. Explain the process of conversion of pyruvate to acetyl Co-A.

Watch Video Solution

79. Describe acetylation of respiration.

Watch Video Solution

80. What is link reaction? Explain.

Watch Video Solution

81. Where do the oxidation and decarboxylation reactions of acetylation occur?

Watch Video Solution

82. Give an equation to show acetylation.

Watch Video Solution

83. Not only glucose but amino acids from protein metabolism and fatty acids from lipid metabolism also participate in Kreb's cycle through acetyl Co-A'. Comment.

Watch Video Solution

84. What is Kreb's cycle? Explain briefly.

Watch Video Solution

85. Give the overall equation of Kreb's cycle.

Watch Video Solution

86. Why is the TCA cycle also called the Kreb cycle?

Watch Video Solution

87. What is Kreb's cycle? Explain briefly.

Watch Video Solution

88. Give the overall equation of Kreb's cycle.

Watch Video Solution

89. Name the steps in which oxidation occurs in Kreb's cycle.

Watch Video Solution

90. Give the overall equation of Kreb's cycle.

Watch Video Solution

91. Oxygen is not directly used in any step in TCA cylce'. Explain.

Watch Video Solution

92. Give the summary of the result of breakdown of pyruvate during phase II of aerobic respiration.

Watch Video Solution

93. Write a note on the significance of Kreb's cycle.

Watch Video Solution

94. Why is Kreb's cycle referred to as an amphibolic pathway?

Watch Video Solution

95. What is ETS? Explain briefly?

Watch Video Solution

96. What is an electron transport chain?

Watch Video Solution

97. What is the function of CO-Q in the electron transport chain.

Watch Video Solution

98. Explain terminal oxidation.

Watch Video Solution

99. What is an electron transport chain?

Watch Video Solution

100. With the help of a schematic representation describe glycolysis.

Watch Video Solution

101. Write explanatory notes on:

Glycolysis

Watch Video Solution

102. Define ETS.

Watch Video Solution

103. How many ATP are produced via substrate level phosphorylation and via oxidative phosphorylation during the complete breakdown of glucose into CO_2 and H_2O?

Watch Video Solution

104. How does the role of water differ in photosynthesis and cellular respiration?

Watch Video Solution

105. How do mitochondria maintain the chemiosmotic gradient used for the electron transport chain?

Watch Video Solution

106. What is the function of CO-Q in the electron transport chain.

Watch Video Solution

107. Cyt c is a small protein localized to the inner mitochondrial membrane that has an important role in the ETC'. Explain.

Watch Video Solution

108. What is oxidative phosphorylation?

Watch Video Solution

109. What is the effect of carbon monoxide poisoning on cytochromes.

Watch Video Solution

110. Name the four protein complexes that catalyse the redox reactions when energy

flows down the energy gradient from NADH to O_2.

Watch Video Solution

111. Why are $F_0 - F_1$ particles complexes that catalyse the redox reactions when energy flows down the energy gradient from NADH to O_2?

Watch Video Solution

112. Read the paragraph and answer the questions given below:

Renewable energy is energy produced from sources that do not deplete or can be replensied within a human's life time. The most common examples include wind, solar, geothermal, biomass, and hydroelectric power. This is in contrast to non-renewable energy is derived directly or indirectly from the sun. Sunlight can be captured directly using solar technologies. The sun's heat drives winds, whose energy is captured with turbines. Plants

also rely on the sun to grow and their stored energy can be utilized for bioenergy. Not all renewable energy sources rely on the sun. For examples, geothermal energy utilizes the Earth's internal heat, tidal energy relies on the gravitational pull of the moon, and hydroelectric power relies on the flow of water.

Why will energy from fossil fuel be over soon?

Watch Video Solution

113. Oxygen is critical for aerobic respiration'. Explain its role in ETS.

Watch Video Solution

114. Meaning of ETS.

A. Glycolysis

B. Krebs cycle

C. Electron transfer chain reaction

D. Terminal oxidation

Answer:

Watch Video Solution

115. Which of the following steps would be omitted when fatty acids are used as a respiratory susbtrate?

Watch Video Solution

116. How would you demonstrate that yeast can respire both aerobically and

anaerobically?

Watch Video Solution

117. How would you demonstrate that yeast can respire both aerobically and anaerobically?

Watch Video Solution

118. Do plant breathe like animals? If yes, how and why?

Watch Video Solution

119. Aerobic respiration is more efficient than anaerobic respiration'. Justify.

Watch Video Solution

120. What is the advantage of step-wise energy release during oxidation?

Watch Video Solution

121. When a substrate is metabolized all the energy is not released at one step'. Discuss.

Watch Video Solution

122. Does oxygen play a vital role in respiration?

Watch Video Solution

123. Oxygen is critical for aerobic respiration'. Explain its role in ETS.

Watch Video Solution

124. The two processes are reverse of each other to some extent. Photosynthesis involves reduction of CO_2 and respiration involves the oxidation of glucose. Explain.

Watch Video Solution

125. Define respiratory quotient. What are the factors that govern RQ?

Watch Video Solution

126. Calculate the respiratory quotient of: fats

Watch Video Solution

127. What is RQ? What is its value for fats?

Watch Video Solution

128. Calculate the RQ for different respiratory substrate using appropriate formula.

Watch Video Solution

129. Write a note on the significance of respiration.

Watch Video Solution

130. Why is Kreb's cycle referred to as an amphibolic pathway?

Watch Video Solution

131. How many ATP are formed by aerobic respiration? Give a balance sheet to show the same 38 ATP are generated by aerobic respiration.

Watch Video Solution

132. Distinguish between the following. Photosynthesis and Respiration.

 Watch Video Solution

133. Distinguish between the following. Photorespiration and Respiration.

 Watch Video Solution

134. Distinguish between the following. Respiration and Combustion.

Watch Video Solution

135. Distinguish between the following.Glycolysis and Fermentation.

Watch Video Solution

136. Distinguish between Glycolysis and TCA cycle :

Watch Video Solution

137. Distinguish between the following. Chloroplast and Mitochondria.

Watch Video Solution

138. Distinguish between the following. Alcoholic fermentation and Lactic acid fermentation.

Watch Video Solution

139. Distinguish between the following. Oxidative Phosphorylation and Photophosphorylation.

Watch Video Solution

140. Distinguish between Aerobic and anaerobic respiration :

Watch Video Solution

141. Fill in the blanks: Acetyl CoA is formed from.....and co-enzyme A.

Watch Video Solution

142. Fill in the blanks:In the prokaryotes..... molecules of ATP are formed per molecule of glucose oxidised.

Watch Video Solution

143. Fill in the blanks:Glycolysis takes place in..... .

Watch Video Solution

144. Fill in the blanks:$F_1 - F_0$ particles participate in the synthesis of..... .

Watch Video Solution

145. Fill in the blanks: During glycolysis.....molecule of $NADH$ are formed.

Watch Video Solution

146. Arrange the acids of Kreb's cycle according to sequence.

Watch Video Solution

147. Why is respiration a catabolic process?

Watch Video Solution

148. Why is repsiration called an intracellular process?

Watch Video Solution

149. Why is respiration known as an exergonic reaction?

Watch Video Solution

150. Why is respiration known as a physicochemical process?

Watch Video Solution

151. In what way is respiration dependant upon photosynthesis?

Watch Video Solution

152. Which is the form of energy used for cellular metabolism?

Watch Video Solution

153. How much energy is released when one molecule of ATP is hydrolysed to ADP and iP?

Watch Video Solution

154. Explain the meaning of the term glycolysis?

Watch Video Solution

155. Name the process common to both aerobic and anaerobic respiration.

Watch Video Solution

156. What are the products of cleavage in glycolysis?

Watch Video Solution

157. When does dehydration occur in glycolysis?

Watch Video Solution

158. Describe the EMP pathway.

Watch Video Solution

159. Which intermediate is oxidised during glycolysis to form $NADH_2$?

Watch Video Solution

160. Which intermediate product undergoes lysis in glycolysis?

Watch Video Solution

161. What is the fate of pyruvate in anaerobic conditions.

Watch Video Solution

162. Name the biochemicals that acts as an electron acceptor in anaerobic respirations.

Watch Video Solution

163. Name the end products of alocoholic fermentation.

Watch Video Solution

164. Name the end products of lactic acid fermentation.

Watch Video Solution

165. What is link reaction? Explain.

Watch Video Solution

166. What is the function of CO-A?

Watch Video Solution

167. Where does Kreb's cycle occur?

Watch Video Solution

168. Which is the first stable compound of Kreb's cycle?

Watch Video Solution

169. Why is the TCA cycle also called the Kreb cycle?

Watch Video Solution

170. Give scientific reasons:

Krebs cycle is also known as citric acid cycle.

Watch Video Solution

171. Why is the TCA cycle also called the Kreb cycle?

Watch Video Solution

172. Name the substrate entrant of Kreb's cycle.

Watch Video Solution

173. Name the reaction in which decarboxylation of pyruvate occurs outside Kreb is Cylce.

Watch Video Solution

174. Explain how oxidative decarboxylation of pyruvic acid takes place.

Watch Video Solution

175. How many molecules of $NADH_2$ are produced in a single turn of the Kreb' s cycle? Name the steps where it is/they are produced.

Watch Video Solution

176. How many molecules of $FADH_2$ are produced in a single turn of the Kreb's cylce? Name the steps where it is/they are produced.

Watch Video Solution

177. Name two sources of acetyl Co-A that enters Kreb's cycle.

178. The substrate level phosphorylation in EMP pathway takes place during

179. Define ETS.

Watch Video Solution

180. Why is the final step of aerobic respiration called terminal oxidation?

Watch Video Solution

181. What are Cytochromes?

Watch Video Solution

182. How many electrons do the element carries of the respiratory chain carry at one time?

Watch Video Solution

183. The site of ATP generation in mitochondria is

Watch Video Solution

184. Name the two mobil carries in ETS.

Watch Video Solution

185. Why is oxygen necessary in aerobic cellular respiration?

Watch Video Solution

186. In which complex ETS is NADH oxidised?

Watch Video Solution

187. Where are F_1 particles located?

Watch Video Solution

188. How many oxidation reactions are involved in the complete oxidation of one glucose molecule?

Watch Video Solution

189. Expand the following. FAD

Watch Video Solution

190. Expand the following. NAD

Watch Video Solution

191. What is an electron transport chain?

Watch Video Solution

192. Where is the respiratory electron transport system located in a cell?

Watch Video Solution

193. Which compound is the terminal electron acceptor in aerobic respiration?

Watch Video Solution

Exercise

1. The reactions of the TCA cycle occur in..... .

A. ribosomes

B. grana

C. mitochondria

D. endoplasmic reticulum

Answer:

Watch Video Solution

2. In eucaryotes the complete oxidation of a molecule of glucose results in the net gain of.

A. 2 molecules of ATP

B. 36 molecules of ATP

C. 4 molecules of ATP

D. 38 molecules of ATP

Answer:

 Watch Video Solution

3. The total ATP between glycolysis and TCA cycle is:

A. 2 molecules of ATP

B. 36 molecules of ATP

C. 4 molecules of ATP

D. 38 molecules of ATP

Answer:

Watch Video Solution

4. During Kreb's cycle, fumaric acid gets converted into malic acid by..... .

A. decarboxylation

B. dehydrogenation

C. dehydration

D. hydration

Answer:

Watch Video Solution

5. Each molecule of $NADH_2$ through ETS yields..... .

A. 1ATPs

B. 2ATPs

C. 3ATPs

D. 4ATPs

Answer:

Watch Video Solution

6. The only 5-C compound produced in Kreb's cycle is..... .

A. citrate

B. $\propto - ke \rightarrow glutarate$

C. $Su \in ate$

D. oxalo-acetate

Answer:

Watch Video Solution

7. In which of the following steps dehyrogenation occurs?

A. `glucose $\rightarrow$ glucose 6-phosphate

B. $3-PGA \rightarrow 2-PGA$

C. $PEPA \rightarrow pyruvate$

D. $PGAL \rightarrow 1,3diPGA$

Answer:

Watch Video Solution

8. Mitochondria is a semi-autonomous cell organelle as it contains

A. Cristae

B. RNA

C. DNA

D. ribosomes

Answer:

Watch Video Solution

9. The amount of energy lost in respiration in the form of heat is about..... .

A. 0.4

B. 0.5

C. 0.6

D. 0.7

Answer:

Watch Video Solution

10. Which of the following derives maximum energy per molecule of glucose?

A. alcoholic fermentaion

B. lactic acid fermentation

C. aerobic respiration in unicellulara organisms

D. glycolysis in liver cells

Answer:

Watch Video Solution

11. One glucose molecule, through ETS yields..... .

A. 2ATP molecules

B. 3ATP molecules

C. 34ATP molecules

D. 38ATP molecules

Answer:

Watch Video Solution

12. On decarboxylation, pyruvate gives..... .

A. acetaldehyde

B. lactic acid

C. ethyl alcohol

D. methyl alcohol

Answer:

Watch Video Solution

13. .....is a reactant in aerobic respiration.

A. sugar

B. water

C. carbon dioxide

D. ATP

Answer:

 Watch Video Solution

14. Formation of ATP in respiration is called..... .

A. photophosphorylation

B. oxidative phosphorylation

C. phosphorylation

D. substrate phosphorylation

Answer:

Watch Video Solution

15. Decarboxylation reaction in aerobic respiration in yeasts takes place in..... .

A. mitchondria

B. ribosomes

C. cytoplasm

D. circular DNA

Answer:

Watch Video Solution

16. Total number of dehydrogenation in Kreb's cycle is..... .

A. 8

B. 10

C. 4

D. 15

Answer:

Watch Video Solution

17. Types of respiration are based on..... .

A. availability of O_2

B. availability of cytoplasm

C. available of glucose

D. release of CO_2

Answer:

Watch Video Solution

18. Enzymes for glycolysis are present in..... .

A. mitochondrial matrix

B. cristae

C. `F_1 particle

D. cytoplasm

Answer:

Watch Video Solution

19. Metabolic water is formed during..... .

A. Glycolysis

B. Link reactions

C. Electron transport system

D. Krebs cycle

Answer:

Watch Video Solution

20. NAD functions as.....acceptor.

A. electron

B. protons

C. hydrogen

D. oxygen

Answer:

Watch Video Solution

21. The chemical linking glycolysis and Kreb's cycle is..... .

A. Succinic acid

B. Acetyl Co-A

C. Citric acid

D. Pyruvate

Answer:

Watch Video Solution

22. How many ATP molecules are produced by glycolysis and acetylation in aerobic respiration including ETS are.....respectively.

A. 8 and 2

B. 2 and 8

C. 8 and 6

D. 6 and 8

Answer:

Watch Video Solution

23. The total number of ATP formed by $NADH_2$ and $FADH_2$ is respectively..... .

A. 2 and 3

B. 3 and 2

C. 2 and 2

D. 3 and 3

Answer:

Watch Video Solution

24. The cytochrome which donates de-energised electron to oxygen is.....

A. cytochrome-a

B. cytochrome-b

C. cytochrome-a3

D. cytochrome-c

Answer:

Watch Video Solution

25. Respiratory quotient is..... .

A. CO_2O_2

B. O_2CO_2

C. H_2CO_2

D. CO_2H_2

Answer:

Watch Video Solution

26. RQ for fat is..... .

A. infinity

B. one

C. more than one

D. less than one

Answer:

Watch Video Solution

27. RQ of glucose in anaerobic respiration is..... .

A. infinity

B. one

C. more than one

D. less than one

Answer:

 Watch Video Solution

28. Anaerobes produce less amount of ATP because they..... .

A. lack Kreb's cycle

B. posses Kreb's cycle

C. lack ETS and TO

D. posses ETS and TO

Answer:

Watch Video Solution

29. Pyruvic acid changes into acetaldehyde by undergoing..... .

A. dehydration

B. dehydrogenation

C. decarboxylation

D. deamination

Answer:

 Watch Video Solution

30. .....enzyme is needed to catalize cleavage.

A. Phospho-glycero mutase

B. Aldolase

C. Pyruvic kinase

D. Herokinase

Answer:

Watch Video Solution

31. The CO_2 concentration in the atmosphere is maintained normal by:

A. Transpiration and respiration

B. Photosynthesis and respiration

C. Guttation and Transpiration

D. Guttation and respiration

Answer:

Watch Video Solution

32. Which of the following steps generate ATP without ETS?

A. pyruvate → acetyl co-A

B. a-ketoglutaric acid → Succinyl Co-A

C. `Iso-citrate → Oxaloacetate

D. Succinyl Co-A → Succinate

Answer:

Watch Video Solution

33. The amount of energy lost in respiration in the form of heat is about..... .

A. 0.4

B. 0.5

C. 0.7

D. 0.6

Answer:

Watch Video Solution

34. The respiratory quotient for protein is..... .

A. 0.1

B. 1

C. 0.9

D. ∞

Answer:

Watch Video Solution

35. Why glycolysis is called as EMP pathway

Watch Video Solution

36. Why is glucose the most preferred respiratory susbtrate?

Watch Video Solution

37. What are Cytochromes?

Watch Video Solution

38. Define fermentation.

Watch Video Solution

39. Give the significance of ETS.

Watch Video Solution

40. Give an account of ATP generation in aerobic respiration.

Watch Video Solution

41. Respiration is a redox reaction'. Explain.

Watch Video Solution

42. Calculate the RQ for different respiratory substrate using appropriate formula.

Watch Video Solution

43. Describe the mechanism of lactic acid fermentation.

Watch Video Solution

44. Distinguish between Aerobic and anaerobic respiration :

Watch Video Solution

45. Write a note on the significance of Kreb's cycle.

Watch Video Solution

46. Define glycolysis.

Watch Video Solution

47. Write a note on the significance of respiration.

Watch Video Solution