## **CLASS XI BIO CH-12**

## **Set 1 – Respiration in Plants**

(Factual / Knowledge-Based)
The breakdown of food materials within cells to release energy is called:     A) Photosynthesis    B) Respiration    C) Fermentation    D) Digestion
Respiration is essentially a process of:     A) Oxidation    B) Reduction    C) Hydrolysis    D) Polymerisation
3. The energy released during respiration is stored as: A) ADP B) ATP C) AMP D) NADH
<ul> <li>4. The full form of ATP is:</li> <li>A) Adenine Triphosphate B) Adenosine Triphosphate C) Adenine Tetraphosphate D)</li> <li>Adenosine Tetraphosphate</li> </ul>
<ul><li>5. The first step of respiration occurs in the:</li><li>A) Mitochondria B) Cytoplasm C) Ribosomes D) Nucleus</li></ul>
6. Glycolysis is also known as:  A) EMP pathway B) TCA cycle C) Calvin cycle D) C4 cycle
<ul><li>7. The EMP pathway was first given by:</li><li>A) Krebs B) Blackman C) Embden, Meyerhof, and Parnas D) Calvin</li></ul>
8. The substrate of glycolysis is: A) Glucose B) Pyruvate C) Acetyl-CoA D) Lactate
9. The end product of glycolysis is: A) CO <sub>2</sub> B) Pyruvic acid C) Acetyl-CoA D) Ethanol
<ul><li>10. Glycolysis occurs in:</li><li>A) Cytoplasm B) Mitochondria C) Chloroplast D) Nucleus</li></ul>
11. In glycolysis, one molecule of glucose yields:  A) 2 ATP (net) B) 4 ATP (net) C) 2 ATP (gross) D) 6 ATP
<b>12</b> . The gross gain of ATP in glycolysis is: A) 2 B) 4 C) 6 D) 8
13. The net gain of ATP in glycolysis is: A) 2 B) 4 C) 6 D) 8

<ul><li>14. The first phosphorylated compound in glycolysis is:</li><li>A) Glucose-6-phosphate B) Fructose-1,6-bisphosphate C) Pyruvate D)</li><li>3-phosphoglycerate</li></ul>
<ul><li>15. The enzyme that phosphorylates glucose is:</li><li>A) Hexokinase B) Phosphofructokinase C) Aldolase D) Enolase</li></ul>
<ul><li>16. Under aerobic conditions, pyruvate enters:</li><li>A) Cytoplasm B) Mitochondria C) Chloroplast D) Nucleus</li></ul>
<ul><li>17. The conversion of pyruvate to acetyl-CoA occurs in:</li><li>A) Cytosol B) Mitochondrial matrix C) Inner membrane D) Cristae</li></ul>
<b>18.</b> The link between glycolysis and Krebs cycle is: A) Acetyl-CoA B) Pyruvate C) NADH D) FADH <sub>2</sub>
<ul><li>19. The TCA cycle is also known as:</li><li>A) Calvin cycle B) Krebs cycle C) EMP pathway D) Photorespiration</li></ul>
20. The TCA cycle occurs in: A) Cytoplasm B) Mitochondria C) Nucleus D) ER
21. The first stable product of Krebs cycle is:  A) Citrate B) Malate C) Fumarate D) Oxaloacetate
<ul> <li>22. The Krebs cycle starts with the condensation of:</li> <li>A) Pyruvate + O<sub>2</sub> B) Acetyl-CoA + Oxaloacetate C) Glucose + ATP D) Malate + NADH</li> </ul>
23. The number of CO₂ molecules released per glucose in TCA cycle is: A) 1 B) 2 C) 4 D) 6
24. Each NADH molecule yields how many ATPs during ETS?  A) 1 B) 2 C) 3 D) 4
25. Each FADH <sub>2</sub> molecule yields how many ATPs during ETS? A) 1 B) 2 C) 3 D) 4
<ul><li>26. The ETS (Electron Transport System) is located in:</li><li>A) Cytoplasm B) Mitochondrial inner membrane C) Outer membrane D) Ribosome</li></ul>
27. The last electron acceptor in aerobic respiration is: A) CO <sub>2</sub> B) O <sub>2</sub> C) NAD <sup>+</sup> D) FAD
28. The end product of aerobic respiration is:  A) Ethanol B) Lactic acid C) CO <sub>2</sub> and H <sub>2</sub> O D) Acetaldehyde
<ul><li>29. The site of oxidative phosphorylation is:</li><li>A) Cytoplasm B) Inner mitochondrial membrane C) Outer mitochondrial membrane D)</li><li>Ribosome</li></ul>

<ul><li>30. The enzyme ATP synthase is located in:</li><li>A) Mitochondrial matrix B) Inner membrane C) Outer membrane D) Intermembrane space</li></ul>
<ul><li>31. Fermentation is a type of:</li><li>A) Aerobic respiration B) Anaerobic respiration C) Photosynthesis D) Oxidation</li></ul>
<ul> <li>32. Alcoholic fermentation produces:</li> <li>A) CO<sub>2</sub> + Lactic acid B) CO<sub>2</sub> + Ethanol C) CO<sub>2</sub> + Acetate D) Acetone</li> </ul>
33. Lactic acid fermentation occurs in: A) Yeast B) Muscles C) Plants D) Mitochondria
<b>34.</b> How many ATP are generated during fermentation? A) 1 B) 2 C) 3 D) 4
<b>35.</b> Respiratory quotient (RQ) = A) $CO_2$ evolved / $O_2$ consumed B) $O_2$ consumed / $CO_2$ evolved C) $CO_2 + O_2$ D) $CO_2 \times O_2$
<b>36.</b> The RQ of carbohydrate is: A) 0.7 B) 1.0 C) 0.9 D) 0.5
<b>37.</b> The RQ of fat is: A) 1.0 B) 0.7 C) 0.9 D) 1.2
38. The RQ of protein is approximately: A) 0.5 B) 0.7 C) 0.9 D) 1.2
<b>39.</b> The RQ of organic acids is: A) >1 B) <1 C) 1 D) 0
<b>40.</b> The total number of ATP molecules produced per glucose during aerobic respiration is: A) 30 B) 36 C) 38 D) 40
<b>41.</b> The number of ATP used in glycolysis per glucose molecule is: A) 1 B) 2 C) 3 D) 4
<b>42.</b> The number of ATP molecules formed per pyruvate during TCA cycle: A) 12 B) 15 C) 18 D) 24
<ul><li>43. In plants, anaerobic respiration occurs in:</li><li>A) Roots in waterlogged soils B) Leaves C) Flowers D) Seeds only</li></ul>
<b>44.</b> During fermentation, the electron acceptor is: A) O <sub>2</sub> B) NAD <sup>+</sup> C) CO <sub>2</sub> D) FAD
<ul><li>45. The Krebs cycle operates only under:</li><li>A) Aerobic conditions B) Anaerobic conditions C) Both D) None</li></ul>

- **46.** Number of NADH produced during one turn of Krebs cycle:
- A) 1 B) 2 C) 3 D) 4
- **47.** Number of FADH₂ produced during one turn of Krebs cycle:
- A) 1 B) 2 C) 3 D) 4
- 48. Number of substrate-level phosphorylations in Krebs cycle:
- A) 1 B) 2 C) 3 D) 4
- **49.** The term "Tricarboxylic acid cycle" was coined by:
- A) Krebs B) Meyerhof C) Hill D) Calvin
- **50.** The main purpose of respiration is to:
- A) Produce oxygen B) Produce energy (ATP) C) Produce carbon D) Produce glucose

## Answer Key (Set 1)

1-B, 2-A, 3-B, 4-B, 5-B, 6-A, 7-C, 8-A, 9-B, 10-A, 11-A, 12-B, 13-A, 14-A, 15-A, 16-B, 17-B, 18-A, 19-B, 20-B, 21-A, 22-B, 23-C, 24-C, 25-B, 26-B, 27-B, 28-C, 29-B, 30-B, 31-B, 32-B, 33-B, 34-B, 35-A, 36-B, 37-B, 38-C, 39-A, 40-C, 41-B, 42-A, 43-A, 44-B, 45-A, 46-C, 47-A, 48-A, 49-A, 50-B.