

26. Cytochrome c functions as:

- A. An ATPase
- B. A mobile electron carrier
- C. A proton pump
- D. A coenzyme

Answer: B

27. The terminal complex of ETS is:

- A. Complex I
- B. Complex II
- C. Complex III
- D. Complex IV

Answer: D

28. Chemiosmosis involves:

- A. Movement of electrons across membranes
- B. Diffusion of protons through ATP synthase
- C. Transport of glucose
- D. None of the above

Answer: B

29. ATP synthase produces ATP by:

- A. Substrate-level phosphorylation
- B. Oxidative phosphorylation
- C. Photophosphorylation
- D. Fermentation

Answer: B

30. Which molecule donates electrons to Complex I?

- A. FADH_2
- B. NADH
- C. ATP
- D. CO_2

Answer: B

31. FADH_2 enters the ETS at:

- A. Complex I
- B. Complex II
- C. Complex III
- D. Complex IV

Answer: B

32. Net ATP from complete aerobic respiration of one glucose molecule is:

- A. 28
- B. 30
- C. 36
- D. 38

Answer: D (may vary between 30–38)

33. Which yields more ATP: NADH or FADH₂?

- A. NADH
- B. FADH₂
- C. Equal
- D. Depends on the organ

Answer: A

34. Substrate-level phosphorylation occurs in:

- A. ETS
- B. Glycolysis and TCA
- C. TCA and ETS
- D. ETS only

Answer: B

35. The proton gradient in mitochondria is used for:

- A. NADH production
- B. Pyruvate transport
- C. ATP synthesis
- D. CO₂ fixation

Answer: C

36. How many ATP are produced from one NADH in ETS?

- A. 1

- B. 2
- C. 2.5 – 3
- D. 4

Answer: C

37. The "link reaction" connects:

- A. Glycolysis and ETS
- B. ETS and TCA cycle
- C. Glycolysis and TCA cycle
- D. None of the above

Answer: C

38. Which step in glycolysis is irreversible?

- A. Glucose to glucose-6-phosphate
- B. Fructose-6-phosphate to F-1,6-BP
- C. PEP to pyruvate
- D. All of the above

Answer: D

39. Malate-aspartate shuttle is responsible for:

- A. Exporting ATP
- B. Importing pyruvate
- C. Transferring NADH into mitochondria
- D. Exporting citrate

Answer: C

40. Pasteur effect refers to:

- A. Enhanced fermentation in presence of oxygen
- B. Inhibition of glycolysis by oxygen
- C. Promotion of respiration by ethanol
- D. Inhibition of respiration by CO₂

Answer: B

41. Ubiquinone in ETS acts as:

- A. A protein pump
- B. Electron donor

- C. Mobile electron carrier
- D. Enzyme

Answer: C

42. Cyanide inhibits which complex of ETS?

- A. Complex I
- B. Complex II
- C. Complex III
- D. Complex IV

Answer: D

43. Rotenone inhibits which part of the ETS?

- A. Complex I
- B. Complex II
- C. Complex III
- D. Complex IV

Answer: A

44. DNP (2,4-Dinitrophenol) acts by:

- A. Inhibiting glycolysis
- B. Uncoupling oxidative phosphorylation
- C. Blocking ATP synthase
- D. Inhibiting TCA

Answer: B

45. The term “oxidative phosphorylation” was proposed by:

- A. Krebs
- B. Warburg
- C. Mitchell
- D. Pasteur

Answer: C

46. Which coenzyme is common in both TCA and glycolysis?

- A. NAD^+
- B. FAD
- C. CoA

- D. FMN

Answer: A

47. The proton motive force drives:

- A. Electron flow
- B. ATP synthesis
- C. NADH oxidation
- D. Carbon fixation

Answer: B

48. The enzyme ATP synthase is located on:

- A. Outer membrane
- B. Inner mitochondrial membrane
- C. Cytoplasm
- D. Matrix

Answer: B

49. In anaerobic glycolysis, the regeneration of NAD^+ occurs through:

- A. CO_2 release
- B. Conversion of pyruvate to lactate
- C. Oxidation in ETS
- D. Oxidation of FADH_2

Answer: B

50. The full oxidation of one molecule of glucose yields:

- A. 10 NADH and 2 FADH_2
- B. 8 NADH and 2 FADH_2
- C. 6 NADH and 4 FADH_2
- D. 12 NADH and 2 FADH_2

Answer: A