**QUESTION BANK- 2024-2025**

**B.Sc. MICROBIOLOGY II YEAR**

**B- 204**

**MICROBIAL METABOLISM**

Q1. What is fermentation? Discuss the various fermentation pathways. (CO1)

Q2. Write in brief about the various types of secondary metabolites produced by microbes. Give examples. (CO5)

Q3. Discuss in detail about Electron Transport Chain. (CO2)

Q4. Define the following-a.) Proton motive force b.) Oxidative phosphorylation c.) Denitrification d.) Secondary metabolites (CO2, CO3 and CO5)

Q5. Describe complete biochemical pathway of TCA cycle. (CO1)

Q6.Write short note on- a.) Inhibitors of ETC b.) Nitrogenase enzyme complex (CO2 and CO3)

Q7. Illustrate the complete nitrogen cycle in nature. (CO4)

Q8. Comment on *Rhizobium*-legume interaction. (CO4)

Q9.Describe the complete pathway of nitrogen assimilation. (CO3)

Q10. Differentiate between- a.) Aerobic and anaerobic respiration b.) Nitrification and denitrification c.) Homolactic fermentation and alcohol fermentation. (CO1 and CO3)

Q11. Describe the structure and function of Nitrogenase. (CO4)

Q12. Discuss Embden Meyerhoff Pathway in detail. (CO1)

Q13. Explain the role of PDH complex during carbohydrate metabolism (CO1)

Q14.Write notes on the following: (a) antibiotics (b) microbial toxins (CO5)

Q15.Write notes on the following: (a) Leghaemoglobin (b) bacteroids (CO4)

Q16.Write a short note on inhibitors of Electron Transport Chain (CO2)

Q17. Write notes on the following: (a) Proton motive force (b) Chemiosmosis (CO2)

Q18. Write notes on the following: (a) *Rhizobium* (b) *Clostridium* (CO4)

Q19. Explain *“Rhizobia-legume interaction”* in detail. (CO3)

Q20. Draw a neat and well labelled diagram of Nitogen cycle in nature.(CO3)

Q21. What do you mean by nitrogen assimilation? Explain. (CO3)

Q22. Describe the interactions of *Bradyrhizobium* anda leguminous plant that results in mutualistic nitrogen fixation. What other plant-bacterium nitrogen fixing associations are known? Describe them.(CO4)

Q23. Write a short note on nitrogen fixing microorganisms. (CO4)

Q24. Draw the structure of ATP synthase. (CO2)

Q25. Discuss different types of fermentations in detail. (CO1)

Q26.Write notes on the following: (a) Nitrifying bacteria (b) Denitrifying bacteria (CO3)

Q27. State the differences between monosaccharides and Disaccharides. (CO1)

Q28. Define Metabolism. Differentiate between Anabolic and Catabolic pathways. (CO1)

Q29. What are redox reactions? Give examples. (CO1)

Q30. Draw a diagram illustrating nitrogen assimilation in plant roots. (CO3)

Q31. With the help of diagram, illustrate the interaction of *Rhizobium* and leguminous plant. (CO4)

Q32. What is fermentation? Discuss the various fermentation pathways. (CO1) **(June-2021)**

Q33. Where does electron transport of cellular respiration happen within the cell of a bacterium? Describe the process. (CO2) **(June-2021)**

Q34. Discuss the nitrogen cycle and give the roles of microbes involved in it**.** (CO3) **(June-2021)**

Q35. Describe the production of microbial secondary metabolites in brief. (CO5)**(June-2021)**

Q36. What do you understand by heterotrophic metabolism? Discuss the various types of heterotrophic metabolism in microorganisms. (CO1) **(June-2021)**

Q37. Write the economic importance of microbes in industries. (CO1) **(June-2021)**

Q38. Give an account of assimilation of inorganic nitrogen. (CO3) **(June-2021)**

Q39. Write short notes on: (a) autotrophic bacteria (b) nitrogenase. (CO4) **(June-2021)**

Q40. Write in brief about the various types of secondary metabolites produced by microbes. Give examples. (CO5) **(June-2021)**

Q41. Define the following terms: (a) Biological Nitrogen Fixation (b) Nitrification and Denitrification (c) Chemiosmosis (d) Zymology (e) Symbiosis. (CO2 and CO4) **(June-2021)**

Q42. Describe the Krebs Cycle and discuss the role of enzyme involved in Krebs Cycle. (CO1)**(June-2022)**

Q43. Describe the free living nitrogen fixation? (CO3) **(June-2022)**

Q44. What is fermentation? Describe the industrial application of fermentation.(CO1)**(June-2022)**

Q45. What is Secondary metabolite? Discuss some important secondary metabolite produced by the microorganisms.(CO5) **(June-2022)**

Q46. What is fermentor? Describe different components of fermentor? (CO1)**(June-2022)**

Q47. How many ATP molecules generated in Glycolysis? Give preparatory and pay off steps of glycolysis. (CO1) **(June-2022)**

Q48. Write short note on any two of the following: (CO1 and CO3)

1. Differentiate between Anabolism and Catabolism
2. Oxidation- Reduction
3. Nitrogenase **(June-2022)**

Q49. Explain Symbiotic Nitrogen Fixation with suitable diagram. (CO4)**(June-2022)**

Q50. Write short notes on any two of the following: (CO1, CO2)

1. Continuous fermentation
2. Electron Transport System
3. Difference between substrate level phosphorylation and oxidative phosphorylation. **(June-2022)**

Q51. What do you understand by fermentation? Give a detailed account on mechanism of fermentation in different microorganism’s. (CO1) **(June-2024)**

Q52. Give a detailed account on different types of fermenters and their industrial applications. (CO1) **(June-2024)**

Q53. What do you understand by secondary metabolites? Give a detailed account on microbial secondary metabolites and their applications. (CO5) **(June-2024)**

Q54. What do you mean by biological nitrogen fixation? Give a general account on mechanism and enzymes involved in nitrogen fixation. (CO4) **(June-2024)**

Q55. Give a general account on electron transport chain and oxidative phosphorylation in microbes. (CO2) **(June-2024)**

Q56. Write short notes on the following: (a) carbohydrate metabolism; (b) aerobic and anaerobic respiration. (CO1) **(June-2024)**

Q57. Write short notes on any two of the following: (a) Substrate level phosphorylation; (b) symbiotic relationship in nitrogen fixation and (iii) components of fermenter and properties. (CO1, CO4) **(June-2024)**

Q58. Give detailed account on microbes involved in free living nitrogen fixers and its importance in nature. (CO4) **(June-2024)**

Q59. What do you understand by Krebs cycle? Give a detailed account on mechanisms and various types of enzymes involved in Krebs cycle. (CO1) **(June-2024)**

Q60. Give a detailed account on microorganisms involved in nitrification and denitrification and their role in nitrogen cycle. (CO3) **(June-2024)**

