**MSc. Microbiology And Bioinformatics**

**IInd Semester**

**MB-201: Biochemistry & Microbial Physiology**

**Very Short Answer Questions**

**1.** Give two examples of sulphur containing amino acids.

2. Give two examples of oligosaccharides

3. Give two examples of pentose sugars

4. Give two examples of reducing sugars

5. Give two examples of aldose sugars

6. Give two examples of ketose sugars

7. How is enthalapy symbolized?

8. How is entropy symbolized?

9. Give the formula of Gibb’s Free energy

10. What is the fullform of ATP?

11. What is the carbon source of autotrophs. Give examples?

12. What is the carbon source of heterotrophs. Give examples?

13. What is the energy source of Chemotrophs. Give examples?

14. What is the energy source of Lithotrophs. Give examples?

15. Give examples of green house gases.

16. Give two examples of thermophiles.

17. Give two examples of barophiles.

18. Give two examples of halophiles.

19. Give two examples of acidophiles.

20. What is the source of electrons for Lithotrophs and Organotrophs?

21. Define anaerobes

22. Define limiting factors.

23. Define growth

24. Define generation time.

25. Name the cell constituents that indicate growth of microorganisms.

26. Define Binary fission.

27. Name the indicator used in Gas pack jar

28. Name the catalyst used in Gas pack jar

29. Name the gases generated inside Gas pack jar by gas generator. Give chemical equation.

30. What is photocell?

31. Name the enzyme responsible for nitrogen fixation.

32. Give examples of ammonifying bacteria

33. . Give examples of nitrite producing bacteria

34. Give examples of nitrate producing bacteria

35. Give examples of dentrifying bacteria

36. Define homolactic acid fermentation.

37 Define heterolactic acid fermentation

38. name the pigment found in Rhizobium.

39. Name one bacteria that fixes nitrogen freely.

40. Name one bacteria that fixes symbiotically.

41. Give examples of Cell wall inhibiting antibiotics

42. Give examples of Cell membrane inhibiting antibiotics

43. Give examples of protein inhibiting antibiotics

44. Give examples of DNA inhibiting antibiotics

45. Give examples of RNA inhibiting antibiotics

46. Name the enzymes found in aerobes that protect them from free radicals.

47. What % of oxygen concentration is required by microaerophiles?

48. What % of oxygen concentration is required by strict aerobes?

49. Give one example of alteration of target sites.

50. Name tetracycline producing microorganism.

**Short Answer questions**

1. **Define** First Law of Thermodynamics
2. Define Enthalapy
3. Define entropy
4. Define Gibb’s Free Energy
5. Define Glycosidic Bonds
6. Define peptide bonds
7. State the second law of thermodynamics
8. Define essential amino acids
9. What is Xanthoprotein test?
10. What is Bial’s test meant for?
11. Define Methanogens
12. Define Methylotrophs.
13. How have thermophiles adapted themselves?
14. How have xerophiles adapted themselves?
15. How have osmophiles adapted themselves?
16. How have psychrophiles adapted themselves?
17. How have halophiles adapted themselves?
18. Define methanogenesis.
19. Define macronutrients and micronutrients.
20. Define extremophiles.
21. Define the lag phase
22. Define the log phase
23. Define the stationary phase
24. Define the decline phase
25. State Beer and Lambert’s law.
26. Draw well labeled diagram of growth phases.
27. Define batch culture
28. Define continous culture
29. Define synchronous culture
30. Draw well labeled diagram of Gas pack Jar
31. Describe the factors affecting nitrification
32. Describe the factors affecting denitrification
33. Define photophosphorylation
34. Define oxygenic photosynthesis
35. Define anoxygenic photosynthesis
36. Define cyclic photosynthesis
37. Define non-cyclic photosynthesis
38. Draw well labeled nitrogen cycle
39. Define bio-leaching
40. Define fermentation
41. How does Cell wall inhibiting antibiotics works?
42. How does Cell membrane inhibiting antibiotics works?
43. How does protein inhibiting antibiotics works?
44. How does DNA inhibiting antibiotics works?
45. How does RNA inhibiting antibiotics works?
46. How does enzymes found in aerobes protect them from free radicals?
47. Define alteration of target sites.
48. Define drug resistance.
49. What are interchelating agents. Give examples.
50. What is By- pass mechanism of Drug resistance?

**Long Answer Questions**

1. Describe in detail the classification, structure and functioning of Carbohydrates
2. Describe in detail the classification, structure and functioning of Proteins
3. Describe in detail the classification, structure and functioning of lipids
4. Describe in detail the glycolysis cycle.
5. Describe in detail the Kreb cycle.
6. Describe in detail the oxidative phosphorylation.
7. Describe in detail the laws of thermodynamics and their applications
8. Describe in detail the structure of ATP and its biological significance.
9. Describe in detail the important biochemical tests for detection of carbohydrate along with their principles.
10. Describe in detail the important biochemical tests for detection of carbohydrate along with their principles.
11. Describe in detail the habitat, physiological adaptation and important applications of thermophiles.
12. Describe in detail the habitat, physiological adaptation and important applications of psychrophiles.
13. Describe in detail the habitat, physiological adaptation and important applications of xerophiles.
14. Describe in detail the habitat, physiological adaptation and important applications of haloophiles.
15. Describe in detail the habitat, physiological adaptation and important applications of acidophiles.
16. Describe in detail the habitat, physiological adaptation and important applications of barophiles.
17. Describe in detail the major nutritional types of microorganisms.
18. Describe in detail the metabolic pathways for generation of hydrogen
19. Describe in detail the metabolic pathways for generation of methane.
20. Describe in detail the habitat, physiological adaptation and important applications of methanogens.
21. Describe in detail the measurement of cell mass along with well labeled diagram
22. Describe in detail the measurement of cell number along with well labeled diagram
23. Describe in detail the measurement of cell constituents along with well labeled diagram
24. Describe in detail the mathematical derivation of generation time
25. Describe in detail the batch culture along with well labeled diagram
26. Describe in detail the chemostat along with well labeled diagram
27. Describe in detail the turbidostat along with well labeled diagram
28. Describe in detail the continous culture along with well labeled diagram
29. Describe in detail the functioning of Gas pak jar along with well labeled diagram
30. Describe in detail the phases of batch culture along with well labeled diagram
31. Describe in detail the classification and characterization of Photosynthetic microorganisms
32. Describe in detail the microbial leaching
33. Describe in detail the Nitrification and its importance
34. Describe in detail the denitrification and its importance
35. Describe in detail the fermentation of carbohydrates
36. Describe in detail the cyclic photosynthesis
37. Describe in detail the non-cyclic photosynthesis
38. Describe in detail the procedure of root nodule formation
39. Describe in detail the acid fermentation
40. Describe in detail the role of carriers in photosynthesis
41. Describe in detail drug resistance and its mechanisms?
42. Describe in detail radiation sensitivity.
43. Describe in detail cell wall affecting drugs and their mechanisms
44. Describe in detail cell membrane affecting drugs and their mechanisms
45. Describe in detail protein synthesis affecting drugs and their mechanisms
46. Describe in detail DNA synthesis affecting drugs and their mechanisms
47. Classify microorganisms based on their oxygen requirement
48. Classify microorganisms based on their pH requirement
49. Classify microorganisms based on their temperature requirements
50. Classify microorganisms based on their salt requirements.