P. P. SAVANI UNIVERSITY

Third Semester of M.Sc. Examination

December-2021

SSMB8090-Microbial Physiology and Metabolism

09.12.2021, Thursday Time: 09:00 p.m. to 011:30 p.m. Maximum Marks: 60

Instructions:

1. The question paper comprises of two sections.
2. Make suitable assumptions and draw neat figures wherever required.
3. Use of scientific calculator is allowed.

Section-I

Q.1 Very Short Questions (Attempt any five) **[10]**

1.1 Define Halophiles and give one example.

1.2 Enlist the factors affecting microbial growth.

1.3 What are two different types of pasteurization? How they differ to each other?

1.4 Give definitions bacteriostatic and bactericidal agents along with one example.

1.5 In the chemostat, what are the two main factors that govern the specific growth rate and cell density.

1.6 Write the uses and composition of depth filters.

Q.2 Write Short Notes (Attempt any two) **[06]**

2.1 Give a short note on ionizing radiation.

2.2 Enlist the advantages and disadvantages of turbidimetric growth estimates.

2.3 Write short note on the viable counting of microbial cell numbers.

Q.3 Detail questions (Attempt any two) **[14]**

3.1 Give a detailed note on the pH classes of microorganism.

3.2 Enlist and explain the factors affecting the effectiveness of antimicrobial agents.

3.3 How heat sterilization works? Explain the D10 and Z-values in detail.

Section-II

Q.1 Very Short Questions (Attempt any five) [10]

1.1 Calculate the ATP yield of glucose through aerobic oxidation.

1.2 What do you mean by amphibolic pathways? Give one example of any amphibolic pathway.

1.3 What are the ribozymes? Give example.

1.4 How enzymes changes their activity with alterations in pH?

1.5 What is PDH complex? Give their importance in metabolism.

1.6 What are the exothermic and endothermic reactions? What is the difference between their std free energy change?

Q.2 Write Short Notes (Attempt any two) [06]

2.1 Give a short note on control of enzyme activity by change in the substrate concentration.

2.2 Enlist the nutritional classification of microorganisms based on carbon energy and electron sources.

2.3 Explain fueling reactions and their role in metabolism using a diagram.

Q.3 Detail questions (Attempt any two) [14]

3.1 What is the role of redox reactions in metabolism?

3.2 Explain the allosteric regulation with appropriate examples.

3.3 Give a detailed note on the fermentation process.