REV-01
MMB/16/21

2023/12

SET A

M.Sc. MICROBIOLOGY
FIRST SEMESTER
MICROBIAL PHYSIOLOGY AND BIOCHEMISTRY
MMB-103

[USE OMR SHEET FOR OBJECTIVE PART]

Duration: 1hr. 30 mins. **Full Marks: 35**

Objective

Time: 15 mins. **Marks: 10**

Choose the correct answer from the following: ***1×10=10***

1. What do you understand by amphiprotic nature of water?
   a. Water can act as an acid
   b. Water can act as a base
   c. Both a and b
   d. None of the above

2. Which of the following is true regarding the Henderson-Hasselbalch equation?
   I. The pH of the solution is always greater than the pKa of the solution.
   II. As the ratio of conjugate base to acid increases, the pH increases.
   III. The hydrogen ion concentration can never equal the acid dissociation constant.
   a. I and II
   b. II only
   c. I only
   d. II and III

3. Ammonium sulphate salt is:
   a. Acidic salt
   b. Complex salt
   c. Neutral salt
   d. Basic salt

4. ΔG for a spontaneous process at constant temperature and pressure is:
   a. $\Delta G = 0$
   b. $\Delta G > 0$
   c. $\Delta G < 0$
   d. $\Delta G = 1$

5. Which one of the following is not an ETC inhibitor?
   a. Rotenone
   b. Antimycin
   c. Azide
   d. Vancomycin

6. Which one of the following is an ETCuncoupler?
   a. 2,4, dinitrophenol
   b. Potassium
   c. ATP
   d. Hydrogen sulfide

7. Which of the following step is common in the glycolysis and pentose phosphate pathway?
   a. Conversion of glucose-6-P to ribose-5-P
   b. Conversion of glucose to glucose-6-P
   c. Conversion of glucose-6-P- to fructose-6-P
   d. Conversion of glucose to glucose-1-P

Why is ATP considered the energy currency of the cell?

a. It holds energy at the site of release from substrates
b. It accepts energy from chemical reactions
c. It can transport energy to locations within the cell
d. It is a protein

Which one of the following is an example of endergonic reaction?

a. Protein synthesis
b. Glycolysis
c. Cellular respiration
d. All of the above

Which of the following is true about exergonic reactions?

a. It is an uphill reaction
b. It is a downhill reaction
c. Gibbs free energy is positive
d. Require energy to begin

-- --- --

Descriptive

Time : 1 hr. 15 mins. Marks : 25

[Answer question no.1 & any two (2) from the rest]

1.	What is the fate of pyruvate in Aerobic and Anaerobic processes?	5
2.	Describe the Electron transport chain in bacteria with diagram.	10
3.	Give the schematic representation of overall view of TCA cycle.	10
4.	Give a thorough explanation on the preparation of weak acids and bases.	10
5.	Explain the mechanism of buffer action with examples.	10

= = *** = =