



Q1) Answer two 2 of the following: (10 Marks)

- A. In the uptake of nutrients by the cell, the microorganisms used several different transport mechanisms, what are these mechanisms?**
- B. What are the methods for measurement of cell numbers?**
- C. One of the factors affecting bacterial growth is osmotic pressure. Describe it in detail.**

Q2) A: Complete the following table: (5 Marks)

Characteristics	Energy	Carbone
Photoautotroph		
	Light	
Chemoheterotroph		
	Inorganic	Organic

Q2) B: 1: Divide the bacteria according to their response to NaCl to three categories (3 Marks)

2: Draw four 4 Bacilli shapes of bacteria with terms (4 Marks)

Q3: Give the function OR functions of the followings (choose 5 only) (10 Marks)

1.mesosomes 2. Lipid A 3. Flagella 4. Cell membrane (2 only) 5. stop codon 6. Capsule

Q4): Put true or false (Choose eight 8) (8 marks)

1. In Gram-Negative bacteria, there are 40 layers of peptidoglycan.
2. Monotrichous: is flagella arrangement that two flagella at each pole of the cell surface.
3. Exosporium is the outermost layer found in some species, aiding adhesion.
4. Large size plasmids are non-conjugative plasmids.
5. Each nucleotide is formed of a deoxyribose sugar, a nitrogen base and a phosphate group.
6. In DNA double helix: Adenine is linked to thymine by double hydrogen bonds.
7. Many enzymes occur in various forms these are called isozymes.
8. Barotolerant bacteria that can grow at high hydrostatic pressure.
9. Three types of RNA are: tRNA, r RNA and sRNA.
10. In the batch culture the cultivation system is open.