



FEDERAL UNIVERSITY OF TECHNOLOGY, MINNA
SCHOOL OF LIFE SCIENCES
DEPARTMENT OF MICROBIOLOGY
SECOND SEMESTER EXAMINATION 2018/2019 SESSION

COURSE CODE: MCB 323

COURSE TITLE: Microbial Physiology (3 Units)

Instruction: Answer five (5) questions in all. Attempt at least two questions in each section

Time: 2 Hours

SECTION A

- 1(a). Differentiate between osmosis and facilitated diffusion in a tabular form.
- 1(b). State the characteristics of transport proteins.
2. Describe the mechanism of nutrient transport by permeases.
3. Write short notes on the following:
 - (i) Uniporter
 - (ii) Low molecular weight heat stable proteins.
4. With the aid of a well labelled diagram, discuss the uptake of nutrients by group translocation.

SECTION B

- 5(a). What is water activity? How do microorganisms adapt to the environment of low water activity?
- 5(b).
 - (i) How does oligotrophic environment affect microbial activities?
 - (ii) Suggest possible ways of cultivating anaerobic microorganisms in the laboratory.
- 6(a).
 - (i) Assuming a bacterial culture that contain 1×10^2 cells at the start of log phase divide every 30 minutes, how many bacterial cells will be there after 6 hrs of exponential growth?
 - (ii) What is microbial growth?
- 6(b). With the aid of diagrams, describe the prokaryotic cell cycle.

- 7a. Differentiate between facultative anaerobic and aerotolerant anaerobes
- 7b.
 - (i) How can you control the pH of a culture medium in the laboratory?
 - (ii) Explain the mechanism of cell damage by UV radiation and how can it be repaired?