

PSG COLLEGE OF ARTS & SCIENCE  
(AUTONOMOUS)

BSc DEGREE EXAMINATION DECEMBER 2023  
(Third Semester)

Branch – MICROBIOLOGY

MICROBIAL PHYSIOLOGY & METABOLISM

Time: Three Hours

Maximum: 50 Marks

SECTION-A (5 Marks)

Answer ALL questions

ALL questions carry EQUAL marks (5 x 1 = 5)

1. The microorganisms obtain energy from the oxidation of chemical compounds are called
  - i) Lithotrophs
  - ii) Organotrophs
  - iii) Autotrophs
  - iv) Chemotrophs
2. The cells in a culture divide at the same time
  - i) continuous culture
  - ii) fed batch culture
  - iii) batch culture
  - iv) synchronous culture
3. Splitting of sugar is known as
  - i) Phosphorylation
  - ii) Lipid hydrolysis
  - iii) Glycolysis
  - iv) Gluconeogenesis
4. Synthesis of purine nucleotide can be done through how many process?
  - i) 2
  - ii) 3
  - iii) 4
  - iv) 1
5. In establishing proton gradient for chemiosmotic ATP generation by aerobic respiration the terminal acceptor is
  - i) nitrate
  - ii) oxygen
  - iii) sulphate
  - iv) CO<sub>2</sub>

SECTION - B (15 Marks)

Answer ALL Questions

ALL Questions Carry EQUAL Marks (5 x 3 = 15)

6.a) Analyse the active transport mechanism.

(Or)

b) Explain the osmosis.

7. a) State the phases of growth curve.

(Or)

b) Develop the sporogenesis in *Bacillus* sp.

8.a) Outline the electron transport chain.

(Or)

b) Organize the bioluminescence and its applications.

Cont...

- 9.a) Apply the biosynthesis of pyrimidines.  
(Or)  
b) Narrate the biosynthesis of glutamate family.
- 10.a) Describe the inorganic substance as final electron acceptors.  
(Or)  
b) Define the lactic acid fermentation with an example.

**SECTION -C (30 Marks)**

Answer ALL questions  
ALL questions carry EQUAL Marks (5 x 6 = 30)

- 11.a) Compare the macro and micro nutrients for microbial growth.  
(Or)  
b) Highlight the group translocation.
- 12.a) Examine the factors influencing the microbial growth.  
(Or)  
b) Distinguish the batch and continuous cultures.
- 13.a) Infer the TCA cycle.  
(Or)  
b) Survey the stages of methanogens.
- 14.a) Elucidate account on synthesis of fatty acids.  
(Or)  
b) Assume the biosynthesis of peptidoglycan.
- 15.a) Discuss the anaerobic respiration.  
(Or)  
b) Summarize the propionic acid fermentation.

Z-Z-Z

END