

PARUL UNIVERSITY
FACULTY OF APPLIED SCIENCE
B.Sc. Summer 2017-18 Examination

Semester: 3
Subject Code: 11101204
Subject Name: Microbial Physiology

Date: 31/05/2018
Time: 10:30 am to 1:00 pm
Total Marks: 60

Instructions:

1. All questions are compulsory.
2. Figures to the right indicate full marks.
3. Make suitable assumptions wherever necessary.
4. Start new question on new page.

- Q.1. A)** Explain transport mechanism which requires ATP and PMF for transport of solutes in thermodynamically unfavorable condition. (08)
- Q.1. B) Answer the following questions (Any two)**
- (a) Define nutrition. Explain any 3 common nutritional requirements. (04)
 - (b) Explain in detail nutritional categories of microorganisms on the basis of energy source. (04)
 - (c) Explain group translocation mechanism in detail with suitable diagram. (04)
- Q.2. A) Answer the following questions.**
- (a) 1. Draw a chart on transport mechanism. (04)
2. Enlist various factors affecting the rate of diffusion.
 - (b) Explain facilitated diffusion mechanism with suitable example and diagram. (04)
- Q.2. B) Answer the following questions (Any two)**
- (a) Define: (03)
 1. Photo heterotrophs
 2. Auxotroph
 3. Hyphotrophs
 - (b) Write a note on growth factors. (03)
 - (c) Write a note on Na⁺-K⁺ pump. (03)
- Q.3. A)** Enlist various methods for the measurement of microbial growth and explain viable cell count method in detail. (08)
- Q.3. B) Answer the following questions (Any two)**
- (a) What is synchronous culture? Explain techniques for synchronous growth in detail. (04)
 - (b) Explain septum formation in Gram negative and Gram positive group of Bacteria. (04)
 - (c) Explain significance of Ca-dipicolinate and soluble proteins during endospore formation. (04)
- Q.4. A) Answer the following questions.**
- (a) Explain structure of endospore in detail with suitable diagram. (04)
 - (b) Enlist different Phases of growth curve and explain them in brief. (04)
- Q.4. B) Answer the following questions (Any two)**
- (a) Explain Endospore germination in detail. (03)
 - (b) Draw different stages of Endospore formation in *Bacillus subtilis*. (03)
 - (c) Explain generation time and diauxic growth. (03)