

**PARUL UNIVERSITY**  
**FACULTY OF APPLIED SCIENCE**  
**B.Sc., Winter 2017-18 Examination**

**Semester: 3****Subject Code: 11101204****Subject Name: Microbial Physiology****Date: 29/12/2017****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) Answer the following (Each of 04 marks) (08)**  
(a) Discuss Common nutritional requirements in microbe?  
(b) Enlist types of Active transport and explain the transport mechanism which requires PMF as an energy source.
- Q.1. B) Answer the following questions (Any two) (04)**  
(a) (Each of 02 marks) (04)  
1. Give example of any two heterotroph.  
2. Define autoheterotroph.  
(b) Short note on Types/modes of reproduction in microbes. (04)  
(c) What is the importance of Growth factors in microbial growth? (04)
- Q.2. A) Answer the following questions. (04)**  
(a) (Each of 02 marks) (04)  
1. What is Facilitated diffusion?  
2. What are the Energy sources in microbial nutrition?  
(b) Discuss Significance of Ca-dipicolinate (DPA) and soluble Proteins (SASP). (04)
- Q.2. B) Answer the following questions (Any two) (03)**  
(a) Define the following: (Each of 01 marks) (03)  
1. Auxotroph.  
2. Growth Phase.  
3. Micronutrient  
(b) Short note on Batch culture. (03)  
(c) Short note on water as a microbial nutrition requirement. (03)
- Q.3. A) Essay type/ Brief note (4x2) (Each of 04 marks) (08)**  
(a) Draw a well labeled structure of Endospore  
(b) How osmotic pressure effects bacterial growth?
- Q.3. B) Answer the following questions (Any two) (04)**  
(a) (Each of 02 marks) (04)  
1. How to calculate generation time?  
2. What are the favorable conditions require for bacterial spore germination?  
(b) Short note on Endospore formation (Stages) in Bacillus. (04)  
(c) Short note Nutritional categories of microorganisms on the basis of carbon and energy source. (04)
- Q.4. A) Answer the following questions. (04)**  
(a) (Each of 02 marks) (04)  
1. What is the effect of temperature on bacterial growth?  
2. Discuss importance of hydrogen in microbial nutrition.  
(b) Explain  $\text{Na}^+ - \text{K}^+$  Pump in detail. (04)

**Q.4. B) Answer the following questions (Any two)**

(a) (Each of 01 marks)

**(03)**

1. What is the application of synchronous culture?
2. Write down the importance of 'P' in microbial nutrition.
3. Why sulfur is important in microbial nutrition?

(b) Short note on Passive diffusion.

**(03)**

(c) Short note on Group translocation.

**(03)**