

3/H-85 (iii) (Syllabus-2015)

Odd Semester, 2020

(Held in March, 2021)

MICROBIOLOGY

(Honours)

(303 T)

**(Elementary Biochemistry and
Microbial Physiology)**

Marks : 56

Time : 3 hours

*The figures in the margin indicate full marks
for the questions*

Answer Question No. **1** which is compulsory
and *any four* from the rest

1. Answer the following : 3×4=12

- (a) Define Helmholtz and Gibbs' free energy.
- (b) Define zymogenecity.
- (c) Differentiate between photoautotrophs and chemoautotrophs.
- (d) Write a short note on anoxygenic photosynthesis.

(2)

2. (a) With the help of suitable diagram, describe the cloverleaf structure of t-RNA. 1+4=5
- (b) Define protein. Discuss its various structural levels of organization. 1+5=6
3. (a) Describe the effect of substrate and enzyme concentrations on the rate of enzymatic reaction. 5
- (b) Derive Michaelis-Menten equation and give the significance of K_m . 5+1=6
4. (a) How does pH influence the growth of microorganisms? Classify micro-organism based on pH requirement giving an example of each class. 2+3=5
- (b) What do you understand by active transport mechanism? Explain it by giving suitable examples. 4+2=6
5. (a) What is fermentation? Briefly describe propionic acid fermentation. 2+4=6
- (b) Give a brief account of ammonia and iron oxidation in microbes. 5
6. (a) Describe first and second laws of thermodynamics. How are they applicable in biological system? 4+4=8
- (b) Write a short note on buffers. 3

(3)

7. (a) Define activation energy and free energy. 2+2=4

(b) Give an account of IUB system of enzyme classification. 7

8. Write short notes on the following : 3+2+4+2=11

(a) Structure of β -DNA

(b) Enzyme active site

(c) Photophosphorylation in cyanobacteria

(d) Transporting proteins
