

U.G. 3rd Semester Examination - 2020
Molecular Biology & Biotechnology
[HONOURS]

Course Code : MBBT-H-302-T-CCR-6

Full Marks : 40

Time : $2\frac{1}{2}$ Hours

The figures in the right-hand margin indicate marks.

Candidates are required to give their answers in their own words as far as practicable.

1. Answer any **five** of the following : 2×5=10
- a) What is substrate level phosphorylation?
 - b) Give an account of ATP yield during prokaryotic aerobic respiration of one Glucose molecule.
 - c) Describe structure of endospore. Name an endospore forming bacterium.
 - d) What are inclusion bodies? Give example of an organic inclusion body found in microbes.
 - e) What is Pasteurization?
 - f) Name two classical and two molecular characteristics used in microbial taxonomy.
 - g) How temperature affects microbial growth? Give an example of Thermophile bacteria.
 - h) Compare exotoxins and endotoxins.

2. Answer any **two** of the following: 5×2=10
- a) Compare Batch and Continuous culture. What happens in lag and stationary phases of bacterial growth? What factors affect generation time of a bacterium? 2+2+1=5
 - b) Define COD, BOD, and TSS. State their importance in sewage disposal process. 3+2=5
 - c) Name a chemotherapeutic agent used to treat bacterial disease. Describe its mode of action. What is drug resistance? How chlorine works as antimicrobial agent? 1+2+1+1=5
 - d) Give example of a plant virus. Describe its features. What is peptidoglycan? 1+2+2=5
3. Answer any **two** of the following: 10×2=20
- a) Describe methods of isolation of pure culture of a bacterial species from a source. How can you preserve the isolated pure culture? What is ATCC? 5+4+1=10
 - b) What are amphotrophic pathways? Describe any one. Write a short note on “methods of food preservation”. 1+5+4=10
 - c) Discuss important mechanism of genetic exchange in prokaryotes. Why R plasmids are important? What is a competent cell? What is

[Turn over]

mixotrophy? Describe any one procedure of measuring microbial growth in terms of cell mass.

$$6+1+1+2=10$$

- d) How microbial growth can be controlled using physical agents? How ribosomal organization differ in bacteria and plant cells? What is lithotrophy? Give an example. Write salient features of bacterial flagella.

$$4+2+1+1+2=10$$
