

2020

(Held in 2021)

BOTANY

(Major)

Paper : 5.1

(Microbiology and Immunology)

Full Marks : 42

Time : 2 hours

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

GROUP—A

(Marks : 21)

1. Answer the following questions in very short : 1×2=2
 - (a) Who discovered anaerobic micro-organisms?
 - (b) Write the full form of PSTV.
2. Write the difference between : 2×2=4
 - (a) Gram +ve and Gram -ve bacterial cell wall
 - (b) Rickettsiae and Chlamydiae

3. Write short notes on (any *three*) : $5 \times 3 = 15$

- (a) Golden age of microbiology
- (b) Ecological importance of methanogens
- (c) Biological nitrogen fixation
- (d) Transmission of plant viruses
- (e) Importance of rRNA in bacterial taxonomy

GROUP—B

(Marks : 21)

4. Answer the following (any *three*) : $7 \times 3 = 21$

- (a) "Both bacteria and archaea have the same basic structure, yet they are placed in different taxons." Justify the statement.
- (b) How do B and T cells differ with respect to antigens that they bind? Which type of T cells play central role in immune system and how? $2+5=7$
- (c) Describe the various catabolic pathways for energy generation found in bacteria.

(3)

- (d) "Transduction is a common tool used by biologists to stably introduce a foreign gene into a host cell's genome." Explain the statement with suitable diagram.
- (e) Do 'water pollution' and 'contamination of water' refer to the same condition? Write about the biological indicators of contaminated water. 2+5=7
