

Total number of printed pages-5

14 (BOT-2) 2026

2024

**BOTANY**

Paper : BOT-2026

Full Marks : 80

Time : Three hours

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

*The levels of Bloom's taxonomy are indicated in  
the bracket [ ] at the end of each question.*

1. Answer the following : 1×7=7
  - (a) A genetic variant or subtype of a microorganism can be called as \_\_\_\_\_.  
[K2]
  - (b) A tomato plant is characterized by yellowing and browning of leaves followed by withering of leaf and stem. The disease can be identified as \_\_\_\_\_.  
[K5]

Contd.

(c) The F<sup>+</sup> segment of bacteria may be transferred to F<sup>-</sup> bacteria by the process of [K2]

- (i) Conjugation
- (ii) Conjugation and Transduction
- (iii) Transduction and Transformation
- (iv) Fragmentation and Conjugation

(d) Lymphatic systems are primarily associated with [K2]

- (i) Phagocytosis
- (ii) Lymph recycling
- (iii) Acquired immunity
- (iv) Innate immunity

(e) Which of the following steps during electron transfer in anoxygenic photosynthesis is the ATP production step? [K3]

- (i) cyt b to cyt f
- (ii) Ubiquinone to cyt b
- (iii) Ferredoxin to ubiquinone
- (iv) cyt f to excited bacteriochlorophyll

(f) Traditional soybean product of Japan fermented with *Bacillus subtilis* and allow fermentation up to 24 h at 60°C is called \_\_\_\_\_ [K2]

(g) Which of the following is a cryoprotectant? [K1]

(i) Ethyl alcohol

(ii) Dimethyl sulphoxide

(iii) Ethyl acetate

(iv) Dimethyl sulfate

2. Give short answer of the following :  $3 \times 3 = 9$

(a) Describe MB test for milk potability [K2]

(b) Explain methods to obtain pure culture [K3]

(c) Classify bacteria based on nutrition [K4]

**Or**

Differentiate benign and malignant tumors [K4]

3. Answer the following : 6×4=24

- (a) Discuss significance of gut microbiome in human health [K2]
- (b) Illustrate pathogenesis process by plant pathogens [K3]
- (c) Outline the industrial production of alcoholic beverages [K4]
- (d) Differentiate humoral and cell mediated immune response [K4]

4. Answer the following : (*any four*) 10×4=40

- (a) Outline the major difference between bacterial and plant photosynthesis. Explain the process of cellular respiration in bacteria. [K2,K4]  
4+6=10
- (b) Define sterilization ? Describe the various techniques of sterilization process used in microbiology. Add a note on methods used for preservation of microorganism. [K2,K3]  
2+5+3=10

**Or**

- (c) Define rhizobacteria? Discuss the beneficial effects of plant growth promoting rhizobacteria for sustainable agricultural production.  $2+8=10$
- (d) Discuss *two* major vegetable diseases of North-East India along with their causal organisms. Mention some effective and sustainable control measurement.  $8+2=10$   
[K2, K3]
- (e) Define opsonization? Discuss the different opsonization mechanism to eliminate foreign particles. Add a note on MHC and its function.  $2+5+3=10$   
[K2, K3]
- (f) Distinguish between probiotic and prebiotic. Justify how probiotics are important for maintain our gut health.  $5+5=10$   
[K3,K4]
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