

**2025/FYUG/EVEN/SEM/
BTCDSM-252/181**

FYUG Even Semester Exam., 2025

BIOTECHNOLOGY

(4th Semester)

Course No. : BTCDSM-252

(Microbiology and Immunology)

Full Marks : 70

Pass Marks : 28

Time : 3 hours

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

UNIT—I

1. Answer any *two* of the following questions :

$2 \times 2 = 4$

- (a) State the structural features of viruses.
- (b) Differentiate between algae and fungi.
- (c) Point out the features of Chlorophyceae.

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(Turn Over)



2. Answer any *one* of the following questions : 10

(a) Write a note on criteria for grouping microorganisms. Point out the features of ascomycetes, basidiomycetes and deuteromycetes. 4+6=10

(b) Give an account of morphology of bacteria. Describe cell structure of bacteria with a labelled diagram. 3+7=10

UNIT—II

3. Answer any *two* of the following questions :

2×2=4

(a) Write a note on transduction in bacteria.

(b) State the nutritional categories of microorganisms.

(c) Name two symbiotic microorganisms.

4. Answer any *one* of the following questions : 10

(a) Write notes on : 5+5=10

(i) Growth curve in microbes

(ii) Generation time in bacteria

(b) Give a detailed account of bacterial conjugation and transformation. 5+5=10

(Continued)

UNIT—III

5. Answer any *two* of the following questions :

2×2=4

- (a) Write a note on sterilization.
- (b) What is inoculation?
- (c) Write a note on autoclaving.

6. Answer any *one* of the following questions : 10

- (a) Give an illustrated account of chemical methods for sterilization.

(b) Write notes on : 5+5=10

- (i) Preparation of culture media
- (ii) Pure culture

UNIT—IV

7. Answer any *two* of the following questions :

2×2=4

- (a) Differentiate between innate and adaptive immunity.
- (b) What is MALT?
- (c) Differentiate between B-lymphocytes and T-lymphocytes.

8. Answer any *one* of the following questions : 10

(a) Write short notes on : 5+5=10

(i) B-cell activation

(ii) Heavy chain gene transcription

(b) Describe the structure of immunoglobulins. Add a note on T-cell receptors.

UNIT—V

9. Answer any *two* of the following questions :

2×2=4

(a) Write the features of autoimmune diseases.

(b) Write a note on Class-II MHC molecules.

(c) Give a short account of Systemic Lupus Erythematosus (SLE).

10. Answer any *one* of the following questions : 10

(a) Describe the life cycle of HIV. Give a short account of Hashimoto's syndrome.

5+5=10

(b) Write notes on : 5+5=10

(i) ELISA

(ii) RIA

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