

**M.Sc. 3rd Semester Examination, 2019**

**MICROBIOLOGY**

**PAPER – MICB-302(Gr. A + B)**

*Full Marks : 40*

*Time : 2 hours*

**Answer all questions**

*The figures in the right-hand margin indicate marks*

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

*Illustrate the answers wherever necessary*

**Write the answers to Questions of each Groups in separate books**

**GROUP – A**

[ Marks : 20 ]

1. Answer any *two* questions : 2 × 2

(a) What is farmyard manure ?

- (b) What is cross-inoculation group ?
- (c) Differentiate Commensalism and Mutualism.
- (d) Define Phyllosphere. Mention few micro-organisms associated with phyllosphere.

2. Answer any *two* questions : 4 × 2

(a) Explain why ammonification and denitrification are very important in  $N_2$  cycle. 2 + 2

(b) State the role of soil microbes in organic matter recycling. 4

(c) Name one plant pathogenic bacteria, virus, fungus and mention the disease caused by each of them. Mention the possible effects of endophytic fungus on plants. 3 + 1

(d) State the advantages of vermicompost ? What is vermiwash ? 3 + 1

3. Answer any *one* question : 8 × 1

(a) Briefly mention the commercial production

of azolla. How it is applied in the crop field ?  
Mention the major constraints in biofertilizer  
use.

4 + 2 + 2

(b) Write in short about (any four) : 2 × 4

(i) Protoplast technology

(ii) Composting

(iii) Mass production of Azotobacter ( flow  
chart only)

(iv) Liquid biofertilizer

(v) Limitations of Bt toxin

(vi) Trichoderma as biocontrol agent.

GROUP – B

[ Marks : 20 ]

4. Answer any two questions : 2 × 2

(a) Why 'vaccination is important for  
community' ?

(b) 'DNA vaccine can module both innate and  
adaptive immune system' – Justify the  
statement.

(c) State the characteristics of enzymes used in immunodiagnostics like ELISA.

(d) Write the potential uses of immunotoxin (antibody plus cytotoxin).

5. Answer any *two* questions : 4 × 2

(a) Distinguish between like and attenuated vaccines ? What is toxoid ? 3 + 1

(b) Describe the hazards of bloods transfusion. 4

(c) Describe the importance of HAT media in monoclonal antibody production. 4

(d) Write short notes on FISH and GISH. 2 + 2

6. Answer any *one* question : 8 × 1

(a) Describe the phases of clinical trial of a vaccine. Write a short note on peptide vaccine. 5 + 3

(b) What are the target proteins in HIV for vaccine development. State briefly about the recent vaccine development strategies against HIV. 3 + 5

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