



NBW-003-019404 Seat No. _____

M. Sc. (Microbiology) (Sem. IV) (CBCS) Examination

April / May - 2017

Micro - 422 : Environmental Biotechnology - I

Faculty Code : 003

Subject Code : 019404

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

[Total Marks : 70

1 Answer any seven : (2 Marks each) 14

- (i) Distinguish between photolithotrophic and photoorganotrophic bacteria.
- (ii) What is biogeography?
- (iii) Enlist techniques used for measuring microbial activities in nature.
- (iv) What is metagenomics?
- (v) State the roles of *hok* and *sok* genes.
- (vi) What is the distinction between biodeterioration and biodegradation?
- (vii) What is cometabolism?
- (viii) Enlist microbial groups known to cause biodeterioration of wood.
- (ix) How are anoxic ecosystems generated?
- (x) Why is the carbon source extensively assimilated during photometabolism?

2 Answer any two of the following : (7 Mark each) 14

- (i) Comment on the potential of microorganisms as geochemical agents.
- (ii) Discuss various nutritional types of bacteria.
- (iii) Give an account of classical and molecular methods to study microbial ecology.

3 Answer the following : (7 Marks each) **14**

- (i) Citing appropriate examples discuss microbial symbiotic interactions.
- (ii) Comment on the role of microbes involved in biotransformation of phosphorous.

OR

3 Answer the following : (7 Marks each) **14**

- (i) Give an account of microbial succession citing suitable example.
- (ii) Describe citing examples positive microbial interactions occurring in nature.

4 Answer any **two** of the following : (7 Marks each) **14**

- (i) Discuss citing suitable example various degrees of pollutant degradation.
- (ii) Describe various types of energy-yielding processes associated with biodegradation.
- (iii) Give an account of alternative electron acceptors important in biodegradation.

5 Write short notes on any **two** of the following : **14**
(7 Marks each)

- (i) Wood stain fungi
- (ii) Biodeterioration of textiles
- (iii) Leather biodeterioration
- (iv) Biodeterioration categories.