



MBU-003-1194005

Seat No. _____

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

April / May - 2018

MICRO - 423 : Environmental Biotechnology - II
(Elective)

Faculty Code : 003

Subject Code : 1194005

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

[Total Marks : 70

1 Answer the following : (any **seven** out of Ten each of 02 14 marks)

- (1) What is lignin ?
- (2) Why lignin is a random polymer ?
- (3) What are lignin peroxidases ?
- (4) What is Acid mine Drainage ?
- (5) Which are the various minerals that are involved in acid mine drainage ?
- (6) What is in situ bioremediation ?
- (7) What is bioventing ?
- (8) What is Bioaugmentation ?
- (9) Which environmental factors need to keep in mind while designing a bioremediation strategy ?
- (10) Give example of two recalcitrant contaminants ?

2 Answer the following : (any **two** out of three each of 07 marks)

- (a) Enlist enzymes involved in ligninolysis and describe action of any one enzyme in detail.
- (b) How does lignin biodegradation differ from cellulose biodegradation? Describe.
- (c) Write a note on pectin biodegradation.

3 Answer the following : (a & b Both are compulsory, each **14** of 07 marks)

- (a) Write a note on problems associated with acid mine drainage.
- (b) Enlist problems with genetically engineered microorganisms employed for bioremediation.

OR

3 Answer the following : (a & b Both are compulsory, each **14** of 07 marks)

- (a) Explain oxidation of metal sulphides with chemical equations in acid mine drainage process.
- (b) Describe various microorganisms involved in acid mine drainage.

4 Answer the following : (any **two** out of Three, each of **14** 07 marks)

- (a) What is ex-situ bioremediation? Describe various techniques of ex-situ bioremediation in brief
- (b) Write a note on phytoremediation.

5 Answer the following : (any **two** out of four, each of **14** 07 marks)

- (a) Briefly describe microbial methylation of mercury
- (b) Describe parameters influencing the process of biodegradation.
- (c) How Chloroaromatics undergo biodegradation ?
- (d) Write a note on pesticide biodegradation.
