

PARUL UNIVERSITY
FACULTY OF APPLIED SCIENCE
M.Sc., Summer 2017-18 Examination

Semester: 4**Subject Code: 11201251****Subject Name: Agricultural and Environmental Microbiology****Date: 08/05/2018****Time: 02:00 pm to 04:30 pm****Total Marks: 60****Instructions:**

1. All questions are compulsory.
2. Figures to the right indicate full marks.
3. Make suitable assumptions wherever necessary.
4. Start new question on new page.

- Q.1. A) Answer the following questions (Each of 04 marks) (08)**
(a) Discuss the Infection of plant cells by rhizobia
(b) Discuss the characteristics of PGPR and classification based on their functional activities.
- Q.1. B) Answer the following questions (Any two)**
(a) **Answer the following questions (Each of 02 marks) (04)**
1. What is Mycorrhizae?
2. Name different processes of Phytoremediation.
(b) Write a short note on VAM. (04)
(c) Discuss briefly the mechanisms of action of PGPR. (04)
- Q.2. A) Answer the following questions.**
(a) **Answer the following questions (Each of 02 marks) (04)**
1. State any two advantages of PGPR.
2. What is AM or VAM?
(b) Write a short note on global warming. (04)
- Q.2. B) Answer the following questions (Any two)**
(a) **Answer the following questions (Each of 01 marks) (03)**
1. Name any two 'Attached Growth Process'.
2. What is Bioremediation?
3. Approximately how many plant species have been classified as hyperaccumulators of heavy metals?
(b) Discuss the Genetics of Nitrogen Fixation. (03)
(c) Write a short note on Nitrogenase enzyme structure. (03)
- Q.3. A) Answer the following questions (Each of 04 marks) (08)**
(a) Define Environmental Audit.
(b) Name the factors effecting the composting process.
- Q.3. B) Answer the following questions (Any two)**
(a) **Answer the following questions (Each of 02 marks) (04)**
1. Differentiate between In situ and Ex situ Bioremediation.
2. Name some microorganisms which are used in bioremediation of hydrocarbon.
(b) Write a short note on Waste water Treatment. (04)
(c) Write a short note on ozone depletion. (04)
- Q.4. A) Answer the following questions.**
(a) **Answer the following questions (Each of 02 marks) (04)**
1. What is Activated sludge process?
2. Define Bio-augmentation and Bio-stimulation.
(b) Write a short note on Composting. (04)
- Q.4. B) Answer the following questions (Any two)**
(a) **Answer the following questions (Each of 01 marks) (03)**
1. What is acid rain?
2. Define waste water.
3. What is Biosurfactant?
(b) Discuss the Mechanisms of phosphate solubilization. (03)
(c) Discuss the benefits of Environmental Audit. (03)