Gujarat University

B.Sc. (Sem - III)

December - 2016

CC - 202 : Microbiology

[Time : 3 Hours] [Max. Marks : 70]

Instructions : (1) Figures to the right indicate full marks.
(2) Wherever necessary, draw neat figure with correct labels.
(3) Mention clearly the number of question you are answering.

1. Answer the following : (any two) 14

(a) Write a note on physico-chemical characteristics of soil.

(b) Describe enrichment culture technique and buried slide method of studying soil micro flora.

(c) Explain with suitable microbial examples : Antagonism, Parasitism and predation.

(d) Describe root nodule formation in leguminous plant.

2. Answer the following : (any two) 14

(a) Compare and contrast : Nitrogen fixation and Denitrification.

(b) Explain biochemical transformations of sulfur and sulfur compounds during sulfur cycle.

(c) Explain mineralization, immobilization and solubilization of phosphorous.

(d) Write a note on biofertilizier.

3. Answer the following : (any two) 14

(a) Explain principle, requirements and procedure of IMViC test.

(b) Describe Standard Plate Count method for quantitative bacteriological analysis of water.

(c) Describe presumptive and completed tests for qualitative bacteriological analysis of water.

(d) Draw flow diagram of drinking water purification plant and explain its operations.

4. Answer the following : (any two) 14

(a) Enlist pollution problems generated due to disposal of untreated waste-water.

(b) Draw overall installation and cross - section of septic tank. Explain how it works.

(c) Write a note on activated sludge process.

(d) Explain anaerobic sludge digestion for solids processing.

5. **Answer the following in one to two lines :** 14

(1) What is Syntrophism ?

(2) What is the role of Gypsum ($CaSO_4$) in Winogradsky column ?

(3) Write one beneficial role of Mycorrhiza.

(4) Give an example (scientific name) of ammonia oxidizing bacteria.

(5) How many glucose molecules are there in cellobiose ?

(6) What is humus ?

(7) Give an example (Scientific name) of iron oxidizing bacteria.

(8) Describe any two nuisance characteristics of algae present in water.

(9) What is serial dilution ?

(10) Give two examples of water borne disease.

(11) Name the pond designed to allow algal growth on the waste water effluent.

(12) What is post aeration ?

(13) What is composting ?

(14) Give one difference between sludge and sewage.

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