

- Note : 1) All questions are compulsory.
2) Draw diagrams wherever necessary.
3) Figures to the right indicate marks.

Q. 1 A) Define the following : (Any Four)

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|----------------|-------------------------|
| i) Cooperation | v) Habitat |
| ii) Synergism | vi) Antagonism |
| iii) Mutualism | vii) Primary Succession |
| iv) Ecosystem | viii) Synecology |

B) Answer the following. (Any Two)

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- Explain sulfur Cycle.
- What is amensalism ? Elaborate with suitable example.
- Explain the concept of Autecology.
- Elaborate on antagonism with an appropriate example.

Q. 2 A) Fill in the blanks : (Any Four)

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- The number of Microorganisms in dirty untidy rooms are _____ than in clean rooms. (greater, lesser, equal to)
- Sedimentation is a _____ method of enumeration of air microflora. (quantitative, qualitative, overall)
- Hypochlorous acid or a hypochlorite in a final concentration of _____ million is sufficient to produce 90 to 99 percent reduction of viruses as well as bacteria. (1:10, 1:2, 1:100)
- The germicidal lamp is a low pressure _____ lamp. (tungsten, mercury, iron)
- In the breakdown of _____ the first step is hydrolysis to aminoacids. (lipids, proteins, carbohydrates)
- Nodule formation occur exclusively on plants of the family _____. (leguminosae, malveceae, sapotaceae)
- In a plants during photosynthesis, the CO_2 is reduced to _____ and the H_2O is decomposed with the liberation of oxygen. (carbohydrates, proteins, lipids)
- During photosynthesis bacteria _____ evolve oxygen. (do, dont, some times)

B) State whether following statements are true or false. (Any Four)

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- The presence of micro organisms in air is of considerable importance economically and to public health.
- Spores are those forms of the microorganisms which are capable of resisting unfavorable conditions for long periods of time.
- The most important factors in maintaining or improving the granulation of soils are the presence of micro organisms and their decomposition products.
- Rhizobium is a non symbiotic nitrogen fixing micro organisms.

P.T.O.

- v) Nitrogenase is a oxygen sensitive enzyme.
- vi) Barterio chlorphylls are responsible for bacterial photosynthesis.
- vii) Droplet nuclei are considered important in the transmission of pathogenic airbornemicro organisms.
- viii) The depth of air borne cells decreased as humidity increased and temperature decreased.

C) Answer the following : (Any Two)

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- i) Describe enumeration of bacteria in air using Hollander and Dalla valle sampler.
- ii) Explain enumeration of bocteria in air using electrostatic air sampler.
- iii) Give a brief account on symbiotic nitrogen fixation.
- iv) Give a brief account on Azotobacter.

Q. 3 A) Explain the following terms : (Any Three)

- i) Break point chlorination
- ii) Index organism
- iii) Potable water
- iv) Sludge
- v) Sanitary Sewers
- vi) Composting

B) Name the following : (Any One)

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- i) Two media used in confirmed test of bacteriological analysis of potable water.
- ii) Two methods of disinfection of potable water.

C) Answer the following : (Any One)

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- i) Describe chlorination and ultraviolet rays as methods of disinfection of potable water.
- ii) Give a brief account on presumptive, confirmed and completed tests for coliforms.
- iii) Give the chemical and microbiological characteristics of waste water.
- iv) Explain the single dwelling units with respect to treatment of waste water for smaller household areas..

4 Write a short note on the following : (Any Three)

- i) Photosynthetic bacteria
- ii) Shelford's law of tolerance.
- iii) Soil microorganism functions
- iv) Air Sanitation
- v) Tertiary treatment
- vi) Slow sand filters

— The End —