

SEAT No. \_\_\_\_\_

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No. of Printed Pages: 2

**SARDAR PATEL UNIVERSITY**  
**B.Sc. Examination – 2022**  
**Date: 16th April, 2022**  
**Microbiology - Semester IV**

**US04CMIC21 – Environmental Microbiology**

Time: 3.00 pm to 5.00 pm

Total Marks: 70

N.B. (i) Attempt All questions.

(ii) Marks are indicated on the right.

Q.1. Select the right answer.

(10)

- 1) \_\_\_\_\_ zone is observed in lake.  
(a) Littoral (b) Limnetic  
(c) Euphotic (d) All of these
- 2) Marine protozoa mainly include species of \_\_\_\_\_.  
(a) Radiolaria (b) Amoeba  
(c) Euglena (d) All of these.
- 3) A relationship in which one organism is benefited and other is neither benefited nor harmed is known as \_\_\_\_\_.  
(a) Ammensalism (b) Commensalism  
(c) Synergism (d) Mutualism
- 4) Carbon cycle results in degradation of \_\_\_\_\_.  
(a) Cellulose. (b) Hemicellulose  
(c) Lignin (d) All of these.
- 5) \_\_\_\_\_ cycle occurs partially under aerobic and partially under anaerobic condition.  
(a) Nitrogen (b) Carbon  
(c) Sulphur (d) None of these.
- 6) Rain, snow and hail fall in \_\_\_\_\_ water category  
(a) Atmospheric (b) Surface.  
(c) Ground (d) Stored.
- 7) \_\_\_\_\_ test is used to differentiate *E.coli* and *Enterobacter aerogenes*.  
(a) SPC (b) IMViC test  
(c) MPN (d) All of these.
- 8) Rapid sand filters are capable of delivering \_\_\_\_\_ million gallons of water/acre/day.  
(a) 50-100 (b) 100-150  
(c) 200-300 (d) 150-200.
- 9) Liquid waste or sewage is also known as \_\_\_\_\_.  
(a) Debris (b) Effluent  
(c) Scrap (d) None of these.
- 10) \_\_\_\_\_ is the method of solid waste management.  
(a) Septic tank (b) Trickling filter  
(c) Composting (d) None of these.



continue.....

(P.T.O.)



**Q.2) (a) Fill in the blank.**

**(8)**

- 1) Micro-organisms are carried with dust particles in form of \_\_\_\_\_ in air.
- 2) A laboratory device used to cultivate variety of sulphur group of organisms \_\_\_\_\_ is known as \_\_\_\_\_.
- 3) \_\_\_\_\_ organism is known as Atypical coliform.
- 4) Zooglear film is formed in \_\_\_\_\_ method of waste water treatment.

**(b) State True or False.**

- 1) Gaseous phase of soil consists of CO<sub>2</sub>, O<sub>2</sub> and N<sub>2</sub>.
- 2) Denitrification is reduction of Nitrate to gaseous nitrogen.
- 3) EMB agar medium is used in completed test for water analysis.
- 4) In anaerobic digester major end products are CO<sub>2</sub> and O<sub>2</sub>.

**Q.3) Answer in brief (Any10)**

**(20)**

- 1) Define: Plasmoptysis.
- 2) What are microbial deposits of ocean? Give examples.
- 3) Draw soil structure and depict different horizons.
- 4) Name two organisms involved in conversion of sulphate to sulphur.
- 5) Define mutualism. Give example.
- 6) Define: Biogeochemical cycle.
- 7) List agents used for disinfection during water purification.
- 8) What is elevated temperature test?
- 9) Why is *E.coli* considered as indicator of fecal pollution? Give two reasons.
- 10) What are oxidation ponds? Which organisms are used in it?
- 11) Define BOD.
- 12) What is the role of anaerobic digester in waste water treatment?

**Q.4) Answer in detail. ( Any four)**

**(32)**

- 1) Enlist methods used for secondary treatment of waste water and explain activated sludge process in detail.
- 2) Write in short: (a) Septic tank. (b) Composting.
- 3) Enlist microbial interactions of soil and explain negative interactions in detail.
- 4) Define Nitrogen fixation: Explain symbiotic nitrogen fixation in detail.
- 5) Enlist and explain nuisance microbes in water.
- 6) Explain: Presumptive and confirmed test.
- 7) Explain: Physical characteristics of soil.
- 8) Short Note: Microbes thriving at high and low temperature.

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