

**C. B. S. (10<sup>th</sup> Semester)**  
**EXAMINATION, 2022**  
**ENVIRONMENTAL CHEMISTRY**  
**(CE-1001)**

[Time: Three Hours]

[Maximum Marks: 40]

**Section-A**

½ each

**(Multiple Choice Questions)**

**Note :** Attempt all questions.

- (1) Photochemical smog consists of:
  - (a) Mixture of partially oxidized hydrocarbons
  - (b) Nitrogen oxides
  - (c) Ozone
  - (d) All of the above
- (2) Visible and ultraviolet spectrometry is a successful technique for analyzing the following in the atmosphere-(i) Ozone and oxidants (ii) Reactive hydrocarbons (iii) NO<sub>x</sub>
  - (a) i and ii
  - (b) ii and iii
  - (c) ii only
  - (d) i, ii, iii
- (3) Which of the following statements are correct for methane
  - (i) It is produced biogenically under anaerobic conditions in submerged soils and landfills.
  - (ii) It is released during extraction production and transport of natural gas.
  - (iii) It is a greenhouse gas.
  - (a) i, ii, iii
  - (b) ii and iii
  - (c) iii only
  - (d) i and ii
- (4) Nitrogen is an essential constituent of:
  - (a) Deoxyribonucleic acid
  - (b) Ribonucleic acid
  - (c) Chlorophyll

- (d) All of the above
- (5) Which of the following pollutants are responsible for the cause of SMOG?
- (a) From incinerators
  - (b) Emissions from vehicles
  - (c) Both incinerators and emissions from vehicles
  - (d) None of the above
- (6) Which of the following is called the secondary air pollutant?
- (a) PANs
  - (b) Ozone
  - (c) Carbon monoxide
  - (d) Nitrogen Dioxide
- (7) Which of the following agents is responsible for turning the TajMahal yellow?
- (a) Sulphur
  - (b) Chlorine
  - (c) Sulphur dioxide
  - (d) Nitrogen dioxide
- (8) Which of the following statements is true about the Air Quality Index?
- (a) It indicates the colour of the air.
  - (b) It predicts ozone levels in your area.
  - (c) It determines the intensity of sound and sound pollution.
  - (d) It estimates air pollution mainly sulphur content in the air.
- (9) The common methods used for dis-infection in water treatment plants are
- (a) Chlorination
  - (b) UV light
  - (c) Both (a) and (b)
  - (d) Phenolic solvent
- (10) Which of the following statement is false?
- (a) The main reason for river water pollution is industrial and domestic sewage discharge
  - (b) Surface water contains a lot of organic matter, mineral nutrients and radioactive materials
  - (c) Oil slick in sea water increases D. O. value
  - (d) Oil spill in sea water causes heavy damage to fishery
- (11) Addition of phosphate fertilizers into water leads to
- (a) Increased growth of decomposer

- (b) Increased algal growth
  - (c) Nutrient enrichment
  - (d) None of the above
- (12) Which of the following statement about sewage treatment is false?
- (a) In primary treatment, large sized particles are filtered through screens and residual water is subjected to sedimentation
  - (b) Secondary treatment involves aerobic digestion of the organic waste
  - (c) In tertiary treatment, the waste water is treated with lime to remove phosphate followed by coagulation
  - (d) Coagulation can be carried out by passing ozone through waste water
- (13) Eutrophication causes reduction in
- (a) Nutrients
  - (b) Dissolved salts
  - (c) Dissolved oxygen
  - (d) All of these
- (14) The activated sludge process is something referred as:
- (a) Fixed bed biological oxidation system
  - (b) Fluid bed biological oxidation system
  - (c) Turning bed biological oxidation system
  - (d) None of the above
- (15) Sewage water can be purified for recycling with the action of
- (a) Aquatic plants
  - (b) Penicillin
  - (c) Microorganisms
  - (d) Fishes
- (16) Sedimentation is a physical process used in wastewater treatment to
- (a) Remove particles that are less dense than water
  - (b) Remove particles that are more dense than water
  - (c) Remove the pertinacious materials from the water
  - (d) None of the above
- (17) Calgon is used for removal of
- (a) Sodium carbonate
  - (b) Permanent hardness of water
  - (c) Potassium carbonate
  - (d) None of the above

- (18) Which of the following is not a unit of hardness?
- (a) Parts per million
  - (b) Degree centigrade
  - (c) Degree Clarke
  - (d) Degree French
- (19) Nitrification process ceases at pH-
- (a) < 5
  - (b) < 6
  - (c) < 4
  - (d) < 7
- (20) On the basis of water retention by the soil, water may be classified as-
- (a) Gravitational water
  - (b) Capillary water
  - (c) Hygroscopic water
  - (d) All

**Section-B**

0.75 each

**(Very Short Answer Type Questions)**

**Note :** Attempt all questions.

1. Explain oxygen bio geological cycle.
2. What are the main sources of sulphur in the atmosphere?
3. Explain primary pollutants of air.
4. What about air quality standard?
5. What is endosulfan?
6. Blue baby syndrome is due to..... (excess of nitrates)
7. What is aerobic treatment of water?
8. Explain hardness of water.
9. ....is used as standard compound to treat hardness of water.
10. Name two chief inorganic constituents of soil.

**Section-C**

1.25 each

**(Short Answer Type Questions)**

**Note :** Attempt all questions.

1. Write about eutrophication.

2. Write about acid rain.
3. What are water quality criteria for domestic and industrial uses?
4. Write about ground water pollution.
5. What is softening of water?
6. What is alkalinity of water?
7. Explain electro dialysis.
8. How fluoride is detected in water?
9. What are the factors affecting soil formation.
10. Discuss soil water classification on the basis of water retention.

**Section-D**

2 each

**(Long Answer Type Questions)**

**Note :** Attempt all questions.

1. Explain the formation of photochemical smog.

**OR**

Write a note on a biogeological cycle with example.

2. What is water pollution. Explain water pollutants in detail.

**OR**

Write a note on hydrological cycle.

3. Explain the treatment of water for industrial uses.

**OR**

Give the classification of Industrial waste water.

4. Discuss ICP for water analysis in detail.

**OR**

Give the differences between BOD and COD.

5. Differentiate between surface soil and subsoil.

**OR**

Discuss soil profile in detail with a well labeled diagram.