

Bago University
Department of Chemistry
Second Semester Examination, September 2019

Second Year BSc
(Chemistry Specialization)
Answer any six Questions

Chem 2109
Water Chemistry
Time Allowed: (3) hours

1. (a) Fill in the blanks with the correct word(s), unit(s), and etc., as necessary.
- (i) Water _____ occurs when pollutants are discharged directly or indirectly into water body.
 - (ii) The methods of water distribution depend upon the _____ of the area.
 - (iii) Nitrogen is essential for living organisms and an important constituent of _____ including genetic material.
 - (iv) Efficient chemicals and _____ method for the treatment of wastewater are the best method for the control of water pollution.
 - (v) Water Pollution is _____ of water bodies.
 - (vi) Sewage treatment is the process that removes the majority of the _____ from wastewater or sewage.
- (b) Select the correct statement(s), word(s), unit(s) and etc., given in the followings.
- (i) TUC method is determined by measuring the absorbance at (546nm, 654nm, 465nm).
 - (ii) The salting of roads during winter periods can contribute significantly to (sodium, nitrogen, chloride) increase in ground water.
 - (iii) (Evaporation, Condensation, Transpiration) is the process by which plants lose water out of their leaves.
 - (vi) Fresh water of pH (7, 6.5, 6) contain lead in the form of $Pb(OH)_2$ and $PbCO_3$ particles.
 - (v) Atmospheric contaminants are also derived from (human, agricultural, industrial) practices.
 - (vi) Treatment of sewage and most wastewater is carried out through separation of solids from liquid, by (sedimentation, filtration, coagulation).
2. (a) (i) How many types of vibrations modes are there for water molecules? What are they? Illustrate them.
- (ii) Explain the precipitation and collection of hydrologic cycle.
- (b) Discuss various methods of water distribution in brief.
3. (a) Write a short note on sodium, potassium and calcium in natural water.
- (b) (i) Discuss that the major ions are naturally very variable in surface and ground water. Explain about chloride and sulphate ions.
- (ii) How do you understand the blue planet?

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4. (a) (i) What are the various tests conducted for physical and chemical examinations of water?
(ii) Illustrate the differences between withdrawal and consumption of water.
- (b) (i) Explain the term 'organic matter'.
(ii) What factors upon which the characteristics of the surface runoff water depend?
5. (a) Explain briefly the sources of water pollution.
(b) What are the technologies for industrial wastewater treatment? Discuss *any three*.
6. (a) Define the following terms.
(i) Direct sources
(ii) Physical treatment process
(iii) Chemical treatment processes
(b) Explain how wastewater can be treated by fixed-growth biological systems.
7. (a) Describe briefly about prevention and control of water pollution.
(b) Explain the source of lead pollution in rain water with equation.
