

**Five Year Integrated M.Sc. Examinations 2023**

**Sem-V**

**Course: EES-3-5-2 (2016)**

**(Water Pollution)**

**Time: 4 hours**

**Full Marks: 80**

Questions are of value as indicated in the margin.

Answer **Question No.1** and **any four** from the rest.

1. Write short notes on **any four** of the following.

- (a) COD analysis
- (b) Toxic effects of Arsenic
- (c) Booms
- (d) Dissolution and precipitation reaction in water
- (e) Henry's law
- (f) Carbonate speciation diagram

4 x 4 = 16

2. Discuss the following:

- (a) Causes and mitigation measures of eutrophication
- (b) Soaps and detergents. Effects of it on the aquatic environment.
- (c) Types of hardness. Discuss the removal process of Ca and Mg.

(2+4)+(4+2)+(2+2)=16

3. (a) Discuss the process involved in preliminary treatment and primary wastewater treatment.

- (b) Give a note on the Trickling filter and activated sludge treatment process.

(2+3)+(5+6)=16

4. (a) What are the major sources of Fluoride in the environment?

- (b) Discuss the methods to mitigate it.

- (c) Write a brief note on the toxic effects of Fluoride.

3+8+5=16

5. (a) What is the Ganga Action Plan?

- (b) Discuss the organisational structure, aims and objectives of the plan.

- (c) Give a note on reasons for its failure.

2+8+6 = 16

6. Give a short note on the following:

- (a) Redox reaction with a suitable example.

- (b) Biomagnification and bioaccumulation.

- (c) Sources of Hg and Cd.

4+6+6 = 16

7. Give a short note on the following:

- (a) Cycling of Hg in aquatic system.

- (b) Major clinical symptoms of As and Pb toxicity on human health.

- (c) Various classes of organochlorine and organophosphate pesticide.

4+6+6 = 16