

MASTER OF SCIENCE (CHEMISTRY) (CBCS - 2018 COURSE)
M.Sc. (Chemistry) Sem-IV AC :SUMMER- 2022
SUBJECT : ENVIRONMENTAL ANALYSIS

Day : Thursday
Date : 7/7/2022

S-20181-2022

Time : 03:00 PM-06:00 PM
Max. Marks : 60

N.B.:

- 1) All questions are **COMPULSORY**.
- 2) Figures to the right indicate **FULL** marks.
- 3) Answer to both the sections should be written in **SEPARATE** answer book.

SECTION-I

Q.1 Attempt **ANY THREE** of the following. **(15)**

- a) Discuss in detail water pollution due to pesticides.
- b) Explain different parameters to determine the quality of drinking water.
- c) Explain the term electro dialysis. How it is used for waste water treatment?
- d) Explain the method for the analysis of BOD and compare it with COD analysis.
- e) Describe the method for the estimation of cyanide from a sample of waste water.

Q.2 Attempt **ANY THREE** of the following. **(15)**

- a) Write a note on 'Activated Sludge Process'.
- b) Explain experimental determination of TOC from water.
- c) Define sludge. Explain different methods available for the disposal of sludge.
- d) Why the pre-treatment of industrial waste water is necessary? How it is achieved?
- e) 100 ml waste water sample was refluxed with 25 ml $K_2Cr_2O_7$ and 30 ml conc. H_2SO_4 for two hours. The solution was titrated with ferrous ammonium sulphate solution and burette reading was 17.7 ml. A 25.0 ml aliquot of 0.25N $K_2Cr_2O_7$ required 24.5 ml of same ferrous ammonium sulphate. Calculate chemical oxygen demand (COD) of the waste water.

SECTION-II

Q.3 Attempt **ANY THREE** of the following. **(15)**

- a) With the help of flow sheet diagram. Explain techniques for toxicity identification of industrial waste water.
- b) How atom economy is defined? In what sense it is a key aspect of the practice of green chemistry.
- c) Explain following chemical treatment used for treating dye industry effluent
i) fenton reagent ii) sodium hypochloride.
- d) How the synthetic dyes are classified? How do they cause water pollution?
- e) Give an account of undesirable characteristics of waste water.

Q.4 Attempt **ANY THREE** of the following. **(15)**

- a) Write a note on principles of green chemistry.
- b) Describe the physical treatment used for treating Dye industry effluents.
- c) How heavy metals are restored in electro-plating industries?
- d) Write a note on renewable and non-renewable resources.
- e) What are the raw materials commonly used in most of the electroplating industries? What are the by-products and their role in process selection?