

M. SC. (Analytical Chemistry) Sem-IV (Choice Based Credit & Grade System) : WINTER - 2018

SUBJECT: ELECTIVE: ENVIRONMENTAL ANALYSIS

Day: Thursday
Date: 25/10/2018

W-2018-1001

Time: 03.00 PM TO 06.00 PM
Max. Marks: 60

N.B:

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

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

- a) Explain the principle and important characteristics of ion exchange resins?
- b) What are the advantages and disadvantages of water as a solvent?
- c) Write atom economy concept with example.
- d) Give brief account of organic pollutants in industrial waste water.
- e) Explain the importance of toxicity identification in waste water. How it is determined?

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

- a) Discuss the technique of chromate recovery and water reuse in electroplating industry.
- b) Describe the role of chlorine used in treating waste water from dye industry. Comment on advantages and disadvantages.
- c) Write down the basic principles of green chemistry.
- d) What are the objectives of pre and primary treatment of industrial waste water? Explain neutralization process used.
- e) Define green reagents? State their applications in chemical synthesis.

SECTION-II

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

- a) Describe the physical treatment used for treating dye industry effluents.
- b) Discuss the factor necessary for process selection in effluent treatment.
- c) Define 'Coagulation'. Explain the role of coagulants and coagulants aids.
- d) Discuss water quality parameters for DO and COD with respect to drinking water and industrial waste water.
- e) Write a note on applications of green chemistry.

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

- a) What are the aims and objectives of industrial waste water treatment?
- b) Explain aerobic and anaerobic process used in biological waste water treatment?
- c) Discuss the 'Trickling filtration' used for treating waste water.
- d) Discuss photochemical oxidative process using H₂O₂ and UV.
- e) What is the relationship of industrial ecology to green chemistry? In which ways are industrial ecology and green chemistry complementary?

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