

M. SC. (ANALYTICAL CHEMISTRY) SEM-IV (CHOICE  
BASED CREDIT & GRADE SYSTEM) : WINTER - 2017

SUBJECT: ELECTIVE: ENVIRONMENTAL ANALYSIS

Day: Tuesday  
Date: 07/11/2017

W-2017-0788

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) Answers to both the sections should be written in **SEPARATE** answer book.

SECTION-I

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

- a) Explain the principle and important characteristics of ion- exchange resins.
- b) Write a note on atom economy concept used in green chemistry.
- c) Give brief account of organic pollutants in industrial waste water.
- d) Explain the importance of toxicity identification in waste water. How it is determined?
- e) Explain 'Reverse Osmosis' with respect to its principle, pretreatment of membrane and regeneration of membrane.

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

- a) Explain Electrodialysis with suitable example.
- b) Discuss photochemical oxidative process using  $H_2O_2$  and UV in waste water treatment.
- c) Define green solvents. State their applications in chemical synthesis.
- d) Write a note on applications of green chemistry.
- e) What is 'In- Plant' treatment? Why it is necessary.

SECTION-II

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

- a) What are the advantages and disadvantages of water as a solvent in green chemistry?
- b) Write a note on principles of green chemistry.
- c) Discuss the chemical oxidation using  $O_3$  to treat waste water.
- d) Discuss the techniques of chromate recovery and water reuse in electroplating industry.
- e) Give an account of undesirable characteristics of waste water.

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

- a) Describe any two parameters with suitable example to determine water quality.
- b) Explain the method for the analysis of BOD and compare it with COD analysis.
- c) Describe the physical treatment used for treating dye industry effluents.
- d) What are the aims and objective of industrial waste water treatment?
- e) Explain aerobic and anaerobic process used in biological waste water treatment.

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