

**M. Sc. (Environment Science and Technology) Sem - II (CBCS) (2013  
Course) : WINTER - 2018**

**SUBJECT: ENGINEERED SYSTEMS FOR WATER & WASTE WATER**

Day: Wednesday  
Date: 14/11/2018

**W-2018-1231**

Time: 10.00 AM TO 01.00 PM  
Max Marks: 60

**N.B:**

- 1) Answer any **FIVE** questions.
- 2) Figures to the right indicate **FULL** marks.
- 3) Draw neat and labeled diagram **WHEREVER** necessary.

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- Q.1** a) Write a note on treatment process with respect to listing primary, secondary, tertiary and advanced waste water treatment. **(06)**
- b) Write a note on oil and grease removal from waste water. **(06)**
- Q.2** a) Describe any two methods sludge disposal. **(06)**
- b) What is root zone technology? Discuss its advantages and disadvantages vis-a-vis conventional waste water disposal methods. **(06)**
- Q.3** a) Explain the principle and working of a rotating biological contractor. **(06)**
- b) Explain break point chlorination. **(06)**
- Q.4** a) Describe the process of removal of iron and manganese from water. **(06)**
- b) What do you understand by softening of water? How is it done and what are its advantages. **(06)**
- Q.5** a) What are the various methods of population forecasting? Describe any one. **(06)**
- b) Explain the principle and design consideration of a sedimentation with coagulation tank. **(06)**
- Q.6** Write short notes on any **THREE** of the following: **(12)**
- a) Disinfection
  - b) Jar test
  - c) Quality standards of drinking water
  - d) Back washing

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