

**B.TECH. DEGREE EXAMINATION, MAY 2014****Eighth Semester**

Branch : Civil Engineering

**ENVIRONMENTAL ENGINEERING-II (C)**

(Old Scheme—Prior to 2010 Admissions)

[Supplementary/Mercy Chance]



Time : Three Hours

Maximum : 100 Marks

*Assume suitable data if necessary.  
Give neat sketches wherever required.*

**Part A**

*Answer all questions.  
Each question carries 4 marks.*

1. Explain the theory of sedimentation.
2. Describe briefly the various constituents of a coagulation sedimentation plant.
3. Differentiate between temporary and permanent hardness.
4. ~~What is meant by softening? How is it achieved?~~
5. Explain any four chemical characteristics of sewage.
6. Describe the grit chambers with reference to their purpose, location and nature of grit.
7. Explain briefly the activated sludge process.
8. What is the principle of an oxidation pond system?
9. Describe the working of a sludge digester.
10. State the advantages of UASB reactor.

(10 × 4 = 40 marks)

**Part B**

*Answer all questions.  
Each question carries 12 marks.*

11. (a) Enumerate the different surface and subsurface sources of water and compare the quality, quantity and suitability of the various sources.

Or

- (b) Design a rectangular sedimentation tank to treat 3780 m<sup>3</sup>/day of coagulated water. Make necessary assumptions. Sketch the inlet, outlet and sludge removal arrangements.

Turn over

12. (a) Draw a neat sketch of a rapid gravity filter and describe how it works.

Or

(b) Explain any three methods used for softening water.

13. (a) Explain with the help of flow diagrams, the various operations/processes employed in conventional waste water treatment.

Or

(b) What do you understand by sedimentation of waste water ? Describe in brief the various types of settling.

14. (a) What do you mean by a trickling filter ? State its advantages and disadvantages.

Or

(b) What are the different methods of aeration used in activated sludge process ? Sketch and explain the activated sludge process.

15. (a) Design a septic tank for 50 users, assuming the rate of water supply as 60 litres per head per day. Assume the time of cleaning the sludge as 3 years.

Or

(b) Discuss briefly : (a) Sludge digestion ; (b) Sludge elutriation and ; (c) Vacuum filtration.

(5 × 12 = 60 marks)

