Code :R5320102

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III B.Tech II Semester(R05) Supplementary Examinations, April/May 2011
ENVIRONMENTAL ENGINEERING-I
(Civil Engineering)

Time: 3 hours **Max Marks: 80**

Answer any FIVE questions
All questions carry equal marks

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1. (a) If 50 cu.m./day of canal water of pH 3.5 and Chloride concentration 50 ppm is mixed with 1500 cu.m./day of a stream water of pH 9.75 and Chloride 125 ppm, find the pH and Chloride in the mixture.
   (b) Give the Desirable and Maximum permissible standards as per IS 10500 for any EIGHT parameters in Drinking water.
2. Discuss the suitability of various surface water sources such as lakes and rivers and ground water sources such as Tube wells and Infiltration Galleries for use in Municipal and Industrial water supplies with reference to their Quality and Quantity.
3. Write short notes on:
   (a) "Coagulation with Iron salts Vs. Coagulation with Lime"
   (b) Factors affecting the Efficiency of Coagulation
   (c) Tube Settlers
   (d) Natural coagulants and Coagulant aids.
4. Describe the construction details, and functions of various components of a 'Slow Sand Filter' with the help of a sketch. Explain in detail how it works and the Operation and maintenance problems associated with it. Also explain its design principles.
5. (a) Compare the merits and demerits of the 'continuous and 'intermittent systems of water supply. Under what conditions would you recommend the use of the latter?
   (b) Write a note on the detection and prevention of wastage of water in the distribution system.
6. (a) A circular sanitary sewer designed to carry the maximum flow of sewage while flowing 70% (i.e., at 0.7 depth) full at a velocity of 0.9 m/sec. If the ratio of Maximum / Average and Average / Minimum flows are 2.5 and 2.0 respectively. Find out:
      i. the proportionate depth of flow
      ii. the velocities of flow generated at the time of average flow, and at the time of minimum flow. Neglect variations in the value of n, the coefficient of roughness of sewer.
   (b) What do you understand by the terms 'self cleansing velocity' and 'limiting velocity' in sewers.
7. (a) Draw a neat sketch of trickling filter and state its necessity and detention period.
   (b) Draw a neat sketch of skimming tank and state its necessity and detention period.
8. (a) Explain in brief the characteristics of sludge produced in various treatment processes.
   (b) Explain how you determine the volume of sludge if its constituents (i.e. volatile matter, fixed matter etc) are known.

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