Code No: 07A60102 | R07 | Set No. 2

III B.Tech II Semester Examinations,APRIL 2011
ENVIRONMENTAL ENGINEERING - I
Civil Engineering

Time: 3 hours   Max Marks: 80

Answer any FIVE Questions
All Questions carry equal marks
⋆ ⋆ ⋆ ⋆ ⋆

1. (a) Explain the operational problems of trickling filter and their remedies.

   (b) Design a primary sedimentation for treating 1 MLD of waste water. Make suitable assumptions. [16]

2. Distinguish between the following:

   (a) Pressure filters and roughing filters.

   (b) High velocity wash and low velocity wash. [8+8]

3. Explain the following along with neat sketches

   (a) Fill and draw type settling tank.

   (b) Continuous flow type settling tank. [8+8]

4. Write short notes on:

   (a) M.P.N.

   (b) Sampling of water. [8+8]

5. Explain the meaning of yield of a well and mention the factors on which it depends. [16]

6. Design and sketch a oxidation pond of a colony of population 30,000 in a tropical country like India, assuming necessary data. Determine detention time also. [16]

7. For the network shown in the figure 1,. determine flow rate in each pipe and head at each node Head at node A=100m. Use Hazen Williams Equation for calculation of head loss and CH for all pipes is 100. [16]

8. (a) What do you understand by "Dry wealth Flow" ? Discuss in brief various factors affecting the dry wealth flow.

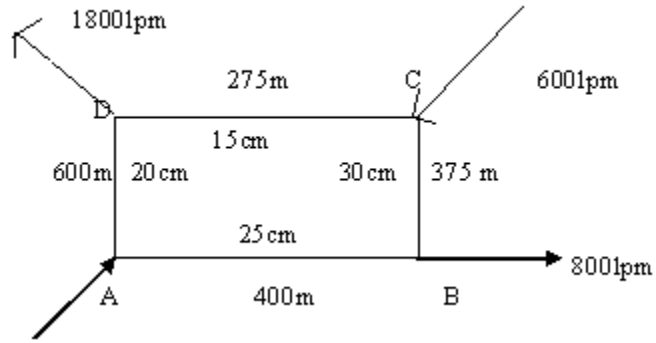   (b) Write down advantages and disadvantages of combined systems of sewerage.[16]

⋆ ⋆ ⋆ ⋆ ⋆

1

FIG-1

****

Code No: 07A60102   **R07**   **Set No. 4**

III B.Tech II Semester Examinations,APRIL 2011
ENVIRONMENTAL ENGINEERING - I
Civil Engineering

Time: 3 hours   Max Marks: 80

Answer any FIVE Questions
All Questions carry equal marks
⋆ ⋆ ⋆ ⋆ ⋆

1. (a) Design a circular sedimentation tank to treat 1 MLD of domestic waste water treatment plant. Make suitable assumptions

   (b) Give advantage and disadvantages of ASP.   [16]

2. (a) What is flocculation? What are the factors which affect its efficiency?

   (b) Discuss in detail the usual coagulants which are employed for the treatment of water.   [8+8]

3. Distinguish between the following:

   (a) Manifold and lateral drains

   (b) Loss of head and negative head.   [8+8]

4. (a) What is the function of storm water regulator in sewerage systems? Drawn a neat sketch of "leaping weir storm regulator".

   (b) Explain in brief " Sewage disposal by dilution".   [16]

5. (a) Draw a neat sketch of the layout of an oxidation ditch and explain the working and functions of various component works.

   (b) What is sludge gas? What is its typical composition ? What are the uses of sludge gas?.   [16]

6. Write short notes on:

   (a) Maintenance of purity of waters

2

   (b) B-coli index.   [8+8]

7. (a) Design the sizes of the sections AB,BC,CD of a water main carrying water as
        mentioned below.
        Section of main   Maximum flow.
        AB   10 lakhs liters per day.
        BC   6 lakhs liters per day.
        CD   3 lakhs liters per day.
        The pressure head at A is 30 meters and a terminal head 15m is needed at D.

   (b) Sketch the details of a water service connection.   [16]

8. Write short notes on :

   (a) French system of tapping underground water .

   (b) Well development .   [8+8]

⋆⋆⋆⋆⋆

Code No: 07A60102   **R07**   **Set No. 1**

III B.Tech II Semester Examinations,APRIL 2011
ENVIRONMENTAL ENGINEERING - I
Civil Engineering

Time: 3 hours   Max Marks: 80

Answer any FIVE Questions
All Questions carry equal marks
⋆ ⋆ ⋆ ⋆ ⋆

1. Differentiate between the following:

   (a) Gravity spring and surface spring

   (b) Deep well and tube well. [8+8]

2. Design a horizontal flow type grit chamber for a proposed sewage treatment plant expected to treat $60,000 m^3/$ day respectively. The flow through velocity is to be controlled by a proportional weir. [16]

3. (a) How the water consumed by the customers is measured ? Describe any suitable device for the same. Discuss on the policy of metering the water supply systems.

   (b) Discuss the advantages.

   (c) Explain the routine maintenance of distribution systems ? What pressures are usually adopted for various pipes. [16]

4. (a) How is orthotolidin test carried out? What are the points to be noted in this test?

   (b) State the procedure of starch-iodide test. [8+8]

5. (a) Which is the most suitable low cost methods of sewage treatment in tropical countries? Discuss its working principles and advantages.

   (b) Discuss anaerobic sludge digestion. Explain the effect of temperature and pH. [16]

6. (a) What are the requirements of a good trap? Under what circumstances, the water seal of trap can break.

   (b) Differentiate between separate and combined systems of sewerage suitable to a town list their merits and demerits. [16]

7. Distinguish between the following:

   (a) Water metres of displacement type and velocity type.

   (b) Arithmetical increase method of population and geometrical increase method of population . [8+8]

4

R07

Set No. 1

8. In an ideal settling tank, 16% of 30 mm diameter particles are removed having specific gravity of 1.20. Temperature at the time of removal is 20^0C. What will be the size of the particles for which the tank is actually designed? Assume the specific gravity of these particles same as that of 30mm diameter particles. [16]

$\star \star \star \star \star$

FIRSTRANKER

Code No: 07A60102 $\boxed{\textbf{R07}}$ $\boxed{\textbf{Set No. 3}}$

III B.Tech II Semester Examinations,APRIL 2011
ENVIRONMENTAL ENGINEERING - I
Civil Engineering

Time: 3 hours Max Marks: 80

Answer any FIVE Questions
All Questions carry equal marks
⋆ ⋆ ⋆ ⋆ ⋆

1. (a) Discuss the two standard tests which are employed to examine water bacteriologically.

   (b) What is B-coli index? How is it determined? [8+8]

2. (a) Compare conservancy and water carriage systems of sanitation.

   (b) Define the terms.
      i. BOD
      ii. Sullage
      iii. Sewage
      iv. Aerobic bacteria
      v. Time of Concentration. [16]

3. Distinguish between the following.

   (a) Dosage and contact time of chlorine.

   (b) Post-chlorination and super-chlorination. [8+8]

4. (a) What do you understand by term sloughing? Explain its role in purification of waste water treatment.

   (b) Differentiate between activated sludge process and trickling filter. [16]

5. Mention the chemical reactions when the following are used as coagulants:

   (a) Sodium aluminate

   (b) Ferrous sulphate and lime

   (c) Magnesium carbonate. [16]

6. (a) Present a note on the characteristics of sludge. Why are proper methods of sludge disposal necessary?.

   (b) What are the conditions that increase the efficiency of sludge digestion ?How are these incorporated in a sludge digestion unit.. [16]

7. Determine the sizes of the pipes in the networks of given below figure 2. The average water is to be supplied at 200 liters/ day/ capita. The maximum rate of supply is 2.5 times the average. [16]
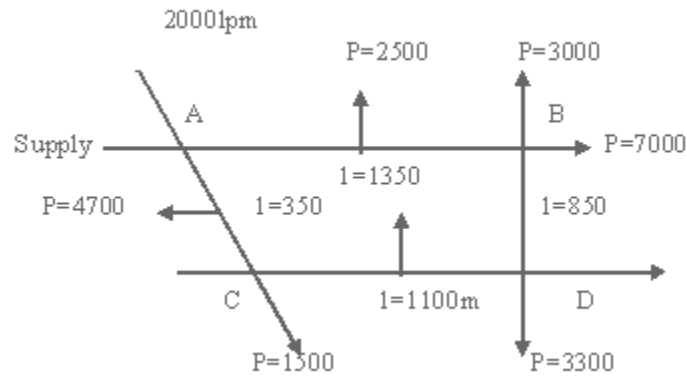
Figure 2:

8. In a recuperation test, the following results were obtained:
   Initial depression head   =   8m
   Final depression head   =   5m
   Time of recuperation   =   2 hours
   Diameter of well   =   4 m
   Calculate specific capacity of well and yield under a head of 3m.   [16]

⋆ ⋆ ⋆ ⋆ ⋆

7