Registration No. : | | | | | | | | | | |

Total number of printed pages – 2

B. Tech

PCCI 4402

Seventh Semester (Special) Examination – 2013

WATER SUPPLY AND SANITARY ENGINEERING

BRANCH : CIVIL

QUESTION CODE : D 481

Full Marks – 70

Time : 3 Hours

Answer Question No. 1 which is compulsory and any five from the rest.

The figures in the right-hand margin indicate marks.

1. Answer the following questions : 2×10

   (a) What is the average domestic water consumption in an Indian city in terms of litres/day ?

   (b) What do you mean by per capita demand ?

   (c) State the various types of impurities normally found in untreated water.

   (d) Distinguish between palatable water and potable water.

   (e) What do you mean by break point chlorination ?

   (f) State the various methods of distribution systems of water normally adopted.

   (g) What is the main object of treatment process of water ?

   (h) Distinguish between aerobic bacteria and anaerobic bacteria.

   (i) What do you mean by septic sewage ?

   (j) Distinguish among sewer, sewage and sewerage.

2. In water works, what are the circumstances, in which pumps are required for use ? Explain the criteria for location of a pumping station. 5+5

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3. Design the sedimentation tank of a water work to treat 100 lakh litres of water per day. The velocity of flow in the sedimentation tank is 25 cm/minute and the detention period is 10 hours. 10

4. State the various properties of sand which can be used for filtration. Explain the construction process of a slow sand filter. 3+7

5. What do you mean by disinfection of water ? Explain the requirements of good disinfectants. What are the methods commonly used for disinfection ? 3+4+3

6. Explain the comparative merits and demerits of the separate system and combined system of sewerage. Describe briefly the water carriage system of collection and conveyance of sewage. 7+3

7. A sewer having diameter of 1.25 m is laid at a gradient of 1 in 350. Find the velocity of flow and discharge through the sewer when running one half full. Assume N = 0.015 in Manning's formula. 10

8. Explain the following terms (any **four**) : 2.5×4

   (a) Chemical characteristics of water

   (b) coagulation

   (c) waste water disposal standards

   (d) activated sludge process

   (e) trickling filter.