

**INDIAN INSTITUTE OF ENGINEERING SCIENCE AND TECHNOLOGY, SHIBPUR**  
**M.E. (Civil) 2<sup>nd</sup> Semester Examination, May, 2014**  
**MANAGEMENT OF WATER SUPPLY AND SANITATION (CE 1038)**

Full Marks : 70

Time : 3 Hours

**PART – 1**

Answer any 3 (Three) questions.

1. Compare the piped and un-piped mode of water supply system. How do the 'population' and 'conservation program' interfere in the water supply planning? Write the advantage of 'concurrent development' of ground water and surface water. Write salient features of a water distribution system.  
(3+4+3+4=14)
2. Write the approach of designing a water distribution network. What are the cathodic and the 'anodic' protection for prevention of corrosion? Briefly highlight on the possible methods of renovation of contaminated groundwater. What kind of maintenance is required for a water distribution system?  
(3+4+4+3=14)
3. Define the terms 'static suction head' 'manometric discharge head'. How can you estimate the 'Total dynamic head' of a pump? Write the significance of 'net positive suction head' of a pump. What is the necessity of 'hydraulic profile' in case of a water treatment plant?  
(4+3+4+3=14)
4. Briefly highlight on the common issues in water works management. How would you go for 'optimal design' of a water treatment system? Write the concept of 'dynamic programming' in the operation of water treatment plant. What is the role of 'cost model' in water treatment?  
(4+4+3+3=14)

**PART – 2**

Answer any 2 (Two) questions.

5. Differentiate between 'off-site' and 'on-site' waste disposal systems. Write the advantages of 'centralized' waste management practice. Write the salient features of 'ECOSAN' concept of sanitation. How would you extend sanitation to a slum area with high population density?  
(4+4+3+3=14)
6. What do you understand by 'partially separate' sewerage system? Write the utility of 'inspection chamber' and 'manhole' in a sewerage system. Briefly highlight on 'shoring' in the construction of sewers. How the 'air test' is performed in a sewerage system?  
(3+4+4+3=14)
7. Comment on different types of maintenance followed in a sewerage system. What are the needs for the inspection of sewers? List common sewer gases and specify adverse effect of any one on human health. What do you understand by 'capacity' of a sewage pump?  
(4+3+4+3=14)