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BICE-014

BTCLEVI

Term-End Examination

June, 2012

BICE-014 : ENVIRONMENTAL ENGINEERING-I

01578

Time : 3 hours *Maximum Marks : 70*

Note : *Answer **any five** questions. Question No.1 is **compulsory**. Assume missing data if any.*

1. (a) Define Percapita demand of water. **7x2=14**

(b) Give the water quality standard for drinking purposes as per BIS.

(c) What are the different materials used for pipes and mention the different pipe fittings (joints) ?

(d) Compare the Incremental method and Geometrical increase method of population forecasting.

(e) Explain the lack detection methods in distribution network.

(f) Differentiate Coagulation and Flocculation

(g) Differentiate BOD and COD.

2. (a) What is meant by variation in the rate of demand ? What are the effects of these variations on the design of various units of a Water Supply Scheme ? 7

(b) Write short notes on the following : 7

(i) Storage capacity of reservoir

(ii) Dams, their types and selection of site.

3. Write short notes on the following : 2x7=14

(a) Testing of water mains

(b) Pipe appurtenances in laying water supply mains.

4. (a) Name the different types of pumps used generally in Water Supply Scheme. What are the factors on which their selection depends ? 7

(b) What are the common impurities found in natural sources of water ? And explain their effects upon it's quality. 7

5. Enumerate and discuss in brief the various physical, chemical and bacterial characteristics of testing of raw water supplies. What steps would you take in order to make them fit for drinking ? 14

6. (a) Design a rectangular sedimentation tank to treat 4000 m^3 / day of coagulated water. Make necessary assumptions. Sketch the inlet, outlet and sludge removal arrangements. **10**

(b) What are the chemicals used for coagulation ? Discuss their comparative merits and demerits. **4**

7. (a) Differentiate between temporary and permanent hardness. **6**

(b) Mention any three methods of softening water. Describe 'zeolite process' of softening water in detail. **8**

8. (a) How will you estimate the quantity of water to be stored in the distribution reservoir ? **7**

(b) Explain the Hardy cross method used for pipe network analysis in water distribution system. **7**