

B.E./B.Tech. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2012.

Fifth Semester

Civil Engineering

CE 2304/CE 53/10111 CE 504 — ENVIRONMENTAL ENGINEERING — I

(Regulation 2008)

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — ($10 \times 2 = 20$ marks)

1. What is the objective of Water Supply Scheme?
2. Define design period.
3. How do you select pipe material for water supply scheme?
4. What is the loss of head in a CI transmission main of 300 mm in diameter and 2 km length with C-value 100, when it carries a flow of $10 \text{ m}^3/\text{min}$?
5. What are the differences between Unit Operations and Unit Process?
6. What are the advantages of chlorine as disinfectant?
7. What is the maximum permissible limit of fluoride in drinking water?
8. How do you protect water treatment plants from corrosion?
9. What is the role of computer applications in Water Supply Systems?
10. How do you identify leakage in pipelines?

PART B — ($5 \times 16 = 80$ marks)

11. (a) The population of a town as per past census records are given below for the years 1951 to 2001. Forecast the population in the years 2026 and 2041 respectively using the following methods.

- (i) Arithmetical increase method
 - (ii) Incremental increase method
 - (iii) Geometrical increase method. (16)
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|---------------|--------|--------|--------|--------|----------|
| Census Year : | 1951 | 1961 | 1971 | 1981 | 2001 |
| Population : | 44,487 | 62,356 | 78,538 | 98,861 | 1,33,582 |

Or

- (b) (i) List out 10 parameters of Water Quality Standards as per the Tamilnadu pollution Control Board Standards. (8)
 - (ii) Write a short notes on various characteristics of water. (8)
12. (a) Explain the different joints used in water supply distribution system. (16)

Or

- (b) What is intake structure? Explain with neat sketches, the various type of intake structures based on sources. (16)
13. (a) Design a sedimentation tank for water treatment plant to treat 8 MLD of water. Assume a surface loading rate of $30 \text{ m}^3/\text{m}^2/\text{day}$. Check the adequacy of detention time. Draw the plan of the water treatment plant. (16)

Or

- (b) With the help of the diagram, explain the process of Rapid sand filter. (16)
14. (a) What is aerators? Explain different type of aerators with sketches.

Or

- (b) Write notes on :
 - (i) Membrane process. (8)
 - (ii) Desalination process. (8)
15. (a) Discuss with neat sketches the various types of layout of distribution system. (16)

Or

- (b) Discuss the various possible water distribution arrangements in multistoried buildings. (16)