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C09–C–405

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BOARD DIPLOMA EXAMINATION, (C–09)

MARCH/APRIL—2014

DCE—FOURTH SEMESTER EXAMINATION

ENVIRONMENTAL ENGINEERING—I

Time : 3 hours] [*Total Marks* : 80

PART—A 3×10=30

Instructions : (1) Answer **all** questions.

(2) Each question carries **three** marks.

(3) Answers should be brief and straight to the point and shall not exceed *five* simple sentences.

1. List any three components of ecosystem.

2. Define the term 'per capita demand' and list any three factors affecting it.

3. Briefly explain the three main variations in the rate of demand.

4. Draw the sketch of an infiltration gallery and label it.

5. Define spring and give the classification of springs.

6. What is the importance of *E. coli* bacteria as an indicator organism

7. List the six methods of chlorination based on point of application and results, etc.

8. Draw the sketch of a grid iron system and show valves and different pipes.

9. State the function and location of *(a)* air valve, *(b)* scour valve and *(c)* water meter.

10. Sketch the layout of water supply arrangements for a multi-storeyed building.

PART—B

10×5=50

Instructions : (1) Answer *any* **five** questions.

(2) Each question carries **ten** marks.

(3) Answers should be comprehensive and the criterion for valuation is the content but not the length of the answer.

11. *(a)* Compare the three systems of forecasting population regarding the computed values and the circumstance in which each method can be used. 3

(b) From the census data of a town given below, estimate the population of the town in the year 2011. Find the total water quantity required per day in the year 2011, if the per capita consumption is 150 LPCD. Use Geometrical increase method : 6+1=7

Year	1931	1941	1951	1961	1971	1981	1991
Population	21600	28550	37850	46500	56450	65780	77350

12. *(a)* Briefly explain the constant plumping test to find yield of a well. 3

(b) Describe the method of pipe laying. 7

13. *(a)* Define aeration and list any four types of aerators. 3

(b) Explain about cascade aerators. 3

(c) State the need for coagulation and list any four coagulants. 2+2=4

14. *(a)* List the four mechanisms of purification in filtration. 2

(b) Explain the construction of a slow-sand filter with the help of a neat sketch. 4+4=8

15. *(a)* Differentiate between temporary hardness and permanent hardness. 3

(b) Explain the various methods of removal of permanent hardness in water. 7

16. *(a)* Define *(i)* service pipe, *(ii)* communication pipe, *(iii)* distribution pipe and *(iv)* air gap. 4

(b) How are the leakages detected in distribution system using a waste detecting meter? 3

(c) List any six preventive measures to eliminate the leakages. 3

17. *(a)* Give the function and location of *(i)* ferrule, *(ii)* gooseneck and *(iii)* stopcock. 3

(b) Draw a neat sketch showing all the details of a water connection taken from the water main to the building. 7

18. *(a)* With the help of a sketch, explain gravity method of distribution. 2+3=5

(b) What do you understand by continuous and intermittent supply system of water? 2

(c) Write any four merits and two demerits of continuous system. 3

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