

**DIPLOMA IN CIVIL ENGINEERING DCLE(G)/
DCLEVI**

Term-End Examination,

December 2019

BCE-033 : ENVIRONMENTAL ENGINEERING

Time : 2 Hours]

[Maximum Marks : 70

Note : (i) Attempt Five questions in all.

(ii) Question No. 1 is compulsory.

(iii) All questions carry equal marks.

1. Choose the correct alternative. 7×2=14

- a) The ratio of maximum daily demand to annual average daily demand is
- | | |
|-----------|----------|
| (i) 1.5 | (ii) 1.8 |
| (iii) 2.0 | (iv) 2.7 |
- b) Which source of water, among the following is not a surface source.
- | | |
|------------|------------|
| (i) River | (ii) Well |
| (iii) Lake | (iv) Ocean |
- c) The colour of water can be determined by instrument known as :
- | |
|-------------------------|
| (i) Dionic water tester |
| (ii) Turbidimeter |
| (iii) Tintometer |
| (iv) None of above |

(2)

- d) Disinfection of water helps in
 - (i) Removing turbidity
 - (ii) Removing hardness
 - (iii) Killing pathogenic bacteria
 - (iv) Complete sterilisation
 - e) The sewer which transport the sewage to the point of treatment is called :
 - (i) House sewer
 - (ii) Main sewer
 - (iii) Outfall sewer
 - (iv) None of these
 - f) Minimum D.O. prescribed for a river stream, to avoid fish kill, is :
 - (i) 2 ppm
 - (ii) 4 ppm
 - (iii) 8 ppm
 - (iv) 10 ppm
 - g) High COD to BOD ratio of on organic pollutant represents
 - (i) High biodegradability of the pollutant
 - (ii) Low biodegradability of the pollutant
 - (iii) Presence of free oxygen for aerobic decomposition.
 - (iv) Presence of toxic material in the pollutant
2. a) Name various surface and ground water sources. Describe any two of these. 7
- b) Define average daily per capita demand and also establish following relationship. 7
- Hourly peak factor demand = $2.7 \times$ annual average hourly demand.

(3)

3. a) Define following in the content of sedimentation tanks. 6
- i) Surface loading
 - ii) Detention period
- b) Compare slow sand filter and rapid gravity filter with reference to following 8
- i) Filter media
 - ii) Method of cleaning
 - iii) Cost of construction
 - iv) Loss of head
4. a) What is Disinfection? Discuss the factors affecting the disinfection process. 7
- b) Describe the Ion-exchange method of water softening. 7
5. a) With the help of neat sketch, explain the spigot and socket joint for connecting water pipes. 7
- b) List the various types of layouts, used in water distribution system and discuss any of these. 7
6. a) Differentiate between discrete particle settling, flocculent settling, hindered settling and compression settling. 8
- b) Explain the role of micro-organism in aerobic biological conversion with the help of suitable reaction diagram. 6

(4)

7. Write short notes on **any four** of the following :

$4 \times 3\frac{1}{2} = 14$

- i) Water meter
- ii) Crown corrosion
- iii) Junction chamber
- iv) Water borne disease
- v) Turbidity
- vi) Infiltration gallery
- vii) Rotating biological contractors.

