

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

Term-End Examination

June, 2017

00094

BCE-033 : ENVIRONMENTAL ENGINEERING

Time : 2 hours

Maximum Marks : 70

Note : *Attempt five questions in all. Question no. 1 is compulsory. All questions carry equal marks. Assume any missing data suitably.*

1. Fill in the blanks : **7×2=14**

- (a) The usual life of cast iron pipes under normal conditions is about _____ .
- (b) Minimum D.O. prescribed for a river stream, to avoid fish kills, is _____ .
- (c) The detention period adopted for a grit chamber is of the order of _____ .
- (d) The unit of turbidity is _____ .
- (e) The bacteria which survive in the absence of oxygen are called _____ .
- (f) A manhole is generally classified as a deep manhole, if its depth is more than _____ .
- (g) The multiplying factor, as applied to obtain the peak hourly demand, in relation to the maximum daily demand is _____ .

2. (a) Enlist various surface and ground water sources. Describe any one of these. 7
- (b) Define average daily per capita demand and list the factors affecting it. 7
3. (a) With the help of a neat sketch, describe the working of a slow sand filter. 7
- (b) What are the qualities of a good disinfectant? List the factors that affect the disinfection process. 7
4. Design a pumping station to raise water from source to service reservoir with the following data : 14

Water to be raised per day = 16000 m^3

Length of suction pipe = 50 m

Length of rising main = 150 m

Coefficient of friction = 0.04

Diameter of pipe

(suction and rising) = 50 cm

Shifts of working of pumps = 2

Duration of each shift = 8 hours

Combined efficiency of motor and pump = 75%

Static head through which water is to be raised = 20 m

5. (a) Using a suitable diagram, discuss the functioning of ventilators used in the sewerage system. 7
- (b) What is crown corrosion ? How can it be prevented ? Explain with the help of a sketch. 7
6. (a) Discuss the different zones of sedimentation with a neat sketch. 7
- (b) Explain the role of micro-organisms in aerobic biological conversion with suitable reactions diagram. 7

7. Write short notes on any **four** of the following : $4 \times 3 \frac{1}{2} = 14$

- (a) Artesian Well
- (b) Bib Cocks
- (c) Alkalinity of Water
- (d) Jet Pumps
- (e) Turbidity
- (f) Water-borne Diseases
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