

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

Term-End Examination

June, 2015

00181

BCE-033 : ENVIRONMENTAL ENGINEERING

Time : 2 hours

Maximum Marks : 70

Note : *Question no. 1 is compulsory. Attempt five questions in all. All questions carry equal marks.*

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

(a) As per National Building Code, domestic consumption of water in an Indian city under normal conditions, has been taken as

- (i) 135 kilolitre/head/day
- (ii) 150 kilolitre/head/day
- (iii) 135 litre/head/day
- (iv) 150 litre/head/day

(b) Which source of water, among the following is **not** an underground source of water ?

- (i) Wells
- (ii) Rivers
- (iii) Springs
- (iv) Infiltration galleries

- (c) Which is the unit of turbidity ?
- (i) MTU
 - (ii) KTU
 - (iii) JTU
 - (iv) LTU
- (d) SPT in reference to water treatment stands for
- (i) Special Plate Count Test
 - (ii) Standard Plate Count Test
 - (iii) Specific Plate Count Test
 - (iv) Standard Phenolic Test
- (e) Which of the following is used to determine the colour of water ?
- (i) Turbidity meter
 - (ii) Nanometer
 - (iii) Tintometer
 - (iv) None of the above
- (f) Which of these is *not* a disinfectant ?
- (i) Silver
 - (ii) Iodine
 - (iii) Sodium aluminate
 - (iv) None of the above

- (g) Activated sludge is the
- (i) aerated sludge in the aeration unit
 - (ii) sludge settled in the humus tank
 - (iii) sludge in the secondary tank after aeration and rich in microbial mass
 - (iv) sludge in the secondary tank after aeration and rich in nutrients
2. (a) List the commonly used underground water sources and discuss any one of them. 7
- (b) What do you understand by domestic water requirement ? Give the approximate break-up of various types of water requirement, if daily demand of water is 270 lpcd. 7
3. (a) What is coagulation ? Discuss the two commonly used coagulants used in the treatment of water. 7
- (b) Differentiate between Grab and Composite methods of sampling of water. 7
4. With the help of a neat sketch, discuss the main components and working of a Rapid sand filter. 14
5. What is a manhole ? Discuss the various types of manholes with their relative advantages. 14
6. Discuss the working principle of activated sludge process. Also draw a flow diagram in schematic form of a wastewater treatment plant that includes activated sludge process. 14

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

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

- (i) Turbidity
 - (ii) Sludge Conditioning
 - (iii) Water Re-use
 - (iv) Jet Pumps
 - (v) Corrosion of Pipes
 - (vi) Spigot and Socket Joint
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