No. of Printed Pages : 5

BCE-033

Diploma in Civil Engineering (DCLE(G))
DCLEVI

Term-End Examination

00432

December, 2012

BCE-033 : ENVIRONMENTAL ENGINEERING

Time : 2 hours *Maximum Marks : 70*

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

---

1. (a) Design period of water distribution system is normally kept as : **14x1=14**

(i) 100 years (ii) 20 years

(iii) 30 years (iv) 50 years

(b) If W is the density of water, Q is the discharge in cubic meter per second and H is total Head, the required horse power as the pump is :

(i) $\frac{WQH}{75}$ (ii) $\frac{WQH}{360}$

(iii) $\frac{WQH}{225}$ (iv) $\frac{WQH}{550}$

(c) Disinfectioning of drinking water is done to remove :

(i) Turbidity (ii) Odour

(iii) Colour (iv) Bacteria

(v) all of the above.

(d) Biochemical Oxygen Demand (B.O.D) of safe drinking water must be :

(i) zero (ii) 5 (iii) 15 (iv) 20

(e) The most commonly used coagulant is :

(i) Chlorine (ii) Alum

(iii) Lime (iv) Bleaching powder

(f) An aquifer, sandwiched between the top and the bottom aquicludes, will supply water to a well is called :

(i) Non-Artesian well (ii) Artesian well

(iii) Flowing well (iv) None of these

(g) The slow sand filters remove bacteria to the extent of :

(i) 80-90% (ii) 90-95%

(iii) 98-99% (iv) None of these

(h) The greywater does not consist of waste water from :

(i) bath rooms (ii) wash basins

(iii) kitchens (iv) toilets

(i) A Drop Manhole is provided if :

(i) A sewer drops from a height

(ii) a branch sewer joins the main sewer at higher level

(iii) A lamp is inserted to check obstruction

(iv) None of above.

(j) The gas coming out from a sludge digestion tank is :

(i) Methane only

(ii) Carbon dioxide only

(iii) 70% methane and 30% carbon dioxide

(iv) 30% methane and 70% carbon dioxide

(k) The value of coefficient of runoff for perfectly impervious areas, tend to :

(i) zero (ii) 0.5 (iii) 1.0 (iv) Infinity

(l) For BOD and COD which statement is correct ?

(i) BOD<COD (ii) BOD=COD

(iii) BOD>COD (iv) None of these

(m) The maximum efficiency of BOD removed is achieved in :

(i) oxidation ditch (ii) oxidation pond

(iii) aerated lagoon (iv) trickling filter

(n) Sludges are stabilized to :

(i) reduce their pathogens

(ii) eliminate offensive odour

(iii) reduce the potential for purification

(iv) all of above

(v) none of above

2. (a) How wells are classified ? Distinguish between gravity and artesian wells. 3+4

(b) What is the significance of Most Probable Number (MPN) test in water quality determination and how it is measured? 7

3. (a) Discuss the guidelines to be followed while collecting water samples. 7

(b) List the water treatment processes covered under "pre-treatment processes". Discuss any one of the processes. 3+4

4. With the help of neat sketch describe the functioning of slow sand filter. 14

5. (a) With the help of line diagram describe the working of Hydraulic Ram. 6

(b) Differentiate between centrifugal and reciprocating pumps with reference to following : 8

(i) Discharge of flow

(ii) Speed of pump

(iii) Efficiency

(iv) Floor space requirement

6. (a) With the help of neat sketch discuss the working of junction chamber. 7

(b) What is crown corrossion and how it can be prevented ? 7

7. Write short notes on ***any four*** of the following : **3½x4=14**

(a) Infilteration galleries

(b) Screens

(c) Break point chlorination

(d) Flanged joint

(e) Sewer rehabilitation

(f) Factors affecting water demand