No. of Printed Pages : 6

BCE-033

Diploma in Civil Engineering (DCLE(G))
DCLEVI

Term-End Examination

00661

June, 2013

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 treatment units are kept as : **14x1=14**

(i) 50 years

(ii) 15 years

(iii) 30 years

(iv) 75 years

(v) None of above

(b) For maximum alkalinity of water, pH should be :

(i) Zero

(ii) Less than 7

(iii) More than 7 but less than 14

(iv) 14

(v) 21

(c) The main disadvantage of hard water is :

(i) Greater soap consumption

(ii) Scaling of boilers

(iii) Corrosion and incrustation of pipes

(iv) All of above

(v) None of above

(d) The bacteria, which can survive with or without free oxygen is known as :

(i) aerobic bacteria

(ii) anaerobic bacteria

(iii) facultative bacteria

(iv) none of above

(e) To remove very fine suspended particles from water , the method adopted is :

(i) screening

(ii) sedimentation

(iii) boiling

(iv) filteration

(f) The rate of flow from a well per unit of drawdawn is know as its :

(i) specific yield

(ii) specific capacity

(iii) field capacity

(iv) none of these

(g) Rapid gravity filters remove bacteria to the extent of :

(i) 80 - 90%

(ii) 90 - 95%

(iii) 98-99%

(iv) None of these

(h) In a sedimentation tank (length -L, width-B and depth - D), the surface over flow rate (SOR) for discharge Q is defined as :

(i) $\frac{Q}{L \times D}$ (ii) $\frac{Q}{B \times D}$

(iii) $\frac{Q}{L \times B}$ (iv) $\frac{Q}{L \times B \times D}$

(i) Chemical Oxygen Demand (COD) of sewage is the :

(i) oxygen required to oxidise biologically active matter

(ii) oxygen required to oxidise biologically inactive organic matter

(iii) both (i) and (ii)

(iv) none of these

(j) The method of refuse disposal, involving burial intrenches, is called :

(i) Incineration

(ii) Pulverisation

(iii) Composting

(iv) None of these

(k) The flaw velocity in a sewer does not depend on :

(i) It's grade

(ii) it 's length

(iii) it's hydraulic mean depth

(iv) it's roughness

(l) Ventilation columns in sewers are provided to :

(i) help in escaping of fuel gases

(ii) help in preventing spread of fuel gases

(iii) to provide support to the sewers

(iv) none of these

(m) The water - tap of the houses are known as :

(i) sluice taps

(ii) stop cocks

(iii) bib cocks

(iv) ferrule

(n) The colour of water can be determined by :

(i) dionic water tester

(ii) turbidimeter

(iii) tintometer

(iv) none of these

2. (a) What do you understand by the term "Water Borne Disease" ? Classify the water borne diseases giving two examples under each category. 7

(b) Define Hardness of water. How will you classify water based on it's hardness ? 7

3. (a) Discuss the common criteria for the design of rectangular sedimentation tank for water treatment plant. 9

(b) Differentiate between coagulation and flocculation. 5

4. (a) Compare slaw Sand filter and rapid sand filter with reference to following : 8

(i) Filter Media

(ii) under drainage system

(iii) Method of cleaning

(iv) cost of construction and operation.

(b) Discuss the Ion - Exchange method of water softening. 6

5. (a) List various types of Joints in water supply pipes. With the help of neat sketch, discuss any one of the joints. 7

(b) What are the various ways of final disposal of effluent of sewage treatment plant ? 7

6. (a) With the help of line diagram, discuss the functioning of activated sludge process. 7

(b) Discuss the advantges and disadvantages of aerobic and anaerobic sludge digestion. 7

7. Write short notes on ***any four*** of the following : **4x3½=14**

(a) Artesian wells

(b) Fire fighting water demand

(c) Turbidity of water

(d) Expansion Joint

(e) Ferrules

(f) Radical layout system of water distribution.