01755

Diploma in Civil Engineering

Term-End Examination

June, 2010

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.*

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1.   Choose the correct alternatives :   14x1=14

   (a)   The maximum daily water demand
         = M × Average per capita daily demand.
         The value of M is :

         (i)   1.5

         (ii)   1.8

         (iii) 2.0

         (iv)   2.7

   (b)   A water having pH equals to 7, is :

         (i)   acidic

         (ii)   alkaline

         (iii) neutral

         (iv)   none of these

(c) Water is considered 'soft', if its hardness does not exceed :

(i) 50 ppm

(ii) 150 ppm

(iii) 200 ppm

(iv) 300 ppm

(d) According to Kuichling formula, water required for fire fighting is given by :

(i) $Q = 3182 \sqrt{P}$

(ii) $Q = 5182 \sqrt{P}$

(iii) $Q = 2182 \sqrt{P}$

(iv) $Q = 8182 \sqrt{P}$

Where,

Q = Amount of water required in liters/minute.

p = Population in thousand.

(e) An aquifer, sandwiched between top and bottom aquicludes is commonly known as :

(i) Non-artesian well

(ii) Artesian well

(iii) Flowing well

(iv) None of the above

(f)	Examples of the displacement pumps are :

(i)	Reciprocating pump

(ii)	Rotary pump

(iii)	Both of the above

(iv)	None of the above

(g)	The waste water coming from bath rooms and kitchen is popularly known as :

(i)	domestic sewage discharge

(ii)	drainage discharge

(iii)	sullage discharge

(iv)	sludge discharge

(h)	A manhole is generally classified as deep manhole, if its depth is more than :

(i)	0.9 m

(ii)	1.2 m

(iii)	1.5 m

(iv)	2 m

(i)	The period of detention for sewage sedimentation tank is of the order :

(i)	(1 - 2) hours

(ii)	(4 - 8) hours

(iii)	(8 - 16) hours

(iv)	(24 - 36) hours

(j)   Pick up the correct statement :

(i)   BOD < COD

(ii)   BOD = COD

(iii)   BOD > COD

(iv)   None of the above

(k)   The activated sludge process is :

(i)   attached growth aerobic process

(ii)   attached growth anaerobic process

(iii)   suspended growth aerobic process

(iv)   suspended growth anaerobic process

(l)   Which of the following is used to determine colour of the water ?

(i)   Turbidity meter

(ii)   Nanometer

(iii)   Tintometer

(iv)   None of these

(m)   Water entering rapid gravity filter has high turbidity as compared to slow sand filter. This statement is :

(i)   True

(ii)   False

(n)   Hypochlorite ions are more effective in removing bacteria than hypochlorous acid. This statement is :

(i)   True

(ii)   False

2. (a) Write and explain various surface and 7
ground water sources.

(b) List various factors which are considered 7
before taking a decision on design period of
water supply schemes.

3. (a) List and explain in brief various 7
bacteriological tests conducted for the
estimation of micro-biological quality of
water.

(b) What do you understand by term, "water 7
borne disease" ? Name the various water
borne diseases under : bacterial, viral and
protozoa origins that can be controlled by
proper treatment of water.

4. (a) List and explain in brief the water treatment 7
processes covered under pre-treatment.

(b) Differentiate between coagulation and 7
flocculation.

5. (a) With the help of sketches, illustrate various 7
types of layout used in water distribution
system.

(b) List various appurtenances used in house 7
water supply.

6. (a) What are the basic components of sanitary   7
         sewer system ?

    (b) Distinguish between sanitary sewer and   7
         storm drainage system.

7. (a) What are different units of sludge   9
         treatment ? Draw a flow diagram of it.
         Also discuss sludge thickening, sludge
         stabilization and sludge dewatering.

    (b) Name various ways of final disposal of   5
         effluent of sewage treatment plant.

8. Write short notes on *any four* :   4x3½=14

    (a) Artesian spring

    (b) Turbidity

    (c) Softening of water

    (d) Jet pumps

    (e) Self cleansing velocity in design of sewer

    (f) Man holes

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