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BCE-033

DIPLOMA IN CIVIL ENGINEERING DCLE(G) / DCLEVI

00525 **Term-End Examination**

December, 2014

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 for the following : *7×2=14*

(a) According to the manual on water supply and treatment, water treatment plants are designed for the period of

(i) 50 years

(ii) 75 years

(iii) 15 years

(iv) 30 years

(b) Using Kuichling formula, the fire demand is calculated as

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

(ii) $Q = 2182 P^{3/2}$

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

(iv) None of the above

(c) Which of these is ***not*** a bacterial disease ?

(i) Cholera

(ii) Typhoid

(iii) Jaundice

(iv) Bacillary dysentery

(d) The Surface overflow rate is defined as

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

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

(iii) $\frac{Q}{V}$

(iv) None of the above

(e) 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

(f) The water tap used in houses is also known as

(i) Sluice tap

(ii) Ferrule

(iii) Stop-cock

(iv) Bib-cock

(g) Which of these statements is correct ?

(i) BOD > COD

(ii) BOD < COD

(iii) BOD = COD

(iv) None of the above

2. (a) Classify the wells according to water flow conditions. Explain any one, with a sketch. *7*

(b) Classify the wells according to the method of constructions. Explain the set-up of a tube-well with a neat sketch. *7*

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

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

4. With the help of a neat sketch, describe the working of a slow sand filter. *14*

5. With the help of a neat sketch, discuss the main components of a centrifugal pump. *14*

6. With the help of a flow diagram, describe the working of an Aerobic sludge digester. Also discuss the relative advantages and disadvantages of aerobic and anaerobic sludge digestion process. *14*

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

(i) Coagulation

(ii) Water hardness

(iii) Self cleaning velocity

(iv) Food/micro-organism ratio

(v) Grit chamber

(vi) Hydraulic Ram