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ET-507(A)

B.Tech. Civil (Construction Management) / B.Tech. Civil (Water Resources Engineering)

Term-End Examination

00342

June, 2018

ET-507(A) : POLLUTANTS AND WATER SUPPLY

Time : 3 hours *Maximum Marks : 70*

Note : *Answer **six** questions in all. Question number **1** is **compulsory**. Use of calculator is permitted.*

1. (a) The primary air pollutant which is formed due to incomplete combustion of organic matter is

(i) methane

(ii) sulphur dioxide

(iii) ozone

(iv) carbon monoxide

(b) The important air pollutants contributing to acid rain are

(i) SO_2 and NO_x

(ii) CO_2 and H_2S

(iii) NO_x and O_3

(iv) None of these

(c) The ratio of maximum hourly consumption of water to an average hourly consumption of a day is

(i) 1·4

(ii) 1·8

(iii) 2·4

(iv) 2·7

(d) Which source of water, among the following, is ***not*** a surface source ?

(i) River

(ii) Lake

(iii) Well

(iv) Ocean

(e) Air valves are generally provided in pressure pipes of water supply

(i) at pipe junction

(ii) at summits

(iii) at end points

(iv) near service pipes

(f) The temporary hardness of water can be removed by

(i) boiling

(ii) adding lime

(iii) adding alum

(iv) filtration

(g) At break point chlorination,

(i) chlorine is used to oxidise

(ii) residual chlorine is zero

(iii) residual chorine is maximum

(iv) residual chlorine reappears

(h) Filtration of water is done to remove

(i) colour

(ii) odour

(iii) turbidity

(iv) pathogenic bacteria

(i) A clariflocculator is a

(i) plain sedimentation unit

(ii) aeration unit

(iii) coagulation-sedimentation unit

(iv) None of the above

(j) The suitable layout for a water supply distribution system, for a city of roads of rectangular pattern, is

(i) dead end system

(ii) grid iron system

(iii) ring system

(iv) radial system *10×1=10*

2. (a) What is ozone layer depletion ? What are its effects on the global environment ? 6

(b) Differentiate amongst refuse, garbage, rubbish and trash. 6

3. (a) With the help of suitable diagram, describe the working of a Hydraulic Ram. 6

(b) What do you understand by composting of solid waste ? Compare the Indore and Bangalore composting procedures. 6

4. (a) Discuss the factors that influence per capita demand of water. 6

(b) A city has a population of 2,00,000 with an average consumption of 150 litres per capita per day. Calculate maximum daily demand, maximum hourly demand and fire demand. 6

5. (a) Differentiate between confined and unconfined aquifers. 6

(b) Discuss the various factors that govern the selection of a particular source in formulating a town/city water supply. 6

6. (a) What is flocculation ? Differentiate between coagulation and flocculation. *6*

(b) The average daily demand in a town has been estimated as 8 million litres per day. Design a suitable sedimentation tank assuming a detention period of 5 hours and velocity of flow of 22 cm per minute. *6*

7. (a) With the help of a neat sketch discuss the working of horizontal pressure filters. *7*

(b) Discuss the factors which influence the disinfection efficiency of chlorine. *5*

8. (a) Compare the relative merits and demerits of lime-soda and zeolite process of water softening. *5*

(b) List various layouts of water distribution systems and discuss any two of them. *1+6*

9. Write short notes on any ***four*** of the following : *4×3=12*

(a) Water quality for fish

(b) Most Probable Number (M.P.N.) Test

(c) Grab sampling of water

(d) Super chlorination

(e) Fabric filter

(f) Expansion joints

(g) Bibcocks