

# END SEMESTER/ RE-TEST EXAMINATION, 2020

CT-506

Environmental engineering

Full mark: 70

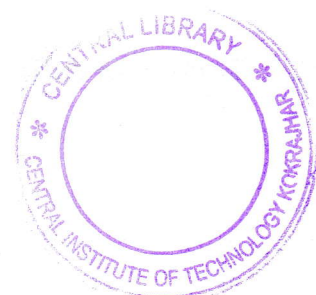
Time: 3 Hour

Part A: All the questions are compulsory

(1\*25=25)

Q1

- i. A water having pH less than 7, is
  - (A) Acidic
  - (B) Neutral
  - (C) Alkaline
  - (D) All the above
- ii. Slow sand filters remove bacteria, to as much as
  - (A) 80-90%
  - (B) 90-95%
  - (C) 98-99%
  - (D) None of the above
- iii. The colour of water can determined on an instrument
  - (A) Water tester
  - (B) Turbidimeter
  - (C) pH meter
  - (D) Tintometer
- iv. The cleaning of slow sand filters is done by
  - (A) Scraping and removal of sand
  - (B) Backwashing
  - (C) Any of above
  - (D) Non of the above
- v. In an irregular grown, the layout of distribution pipes generally adopted, is
  - (A) Grid-iron system
  - (B) Dead end system
  - (C) Ring system
  - (D) All the above
- vi. The maximum safe permissible limit of chloride in domestic water supplies is
  - (A) 20ppm
  - (B) 100ppm
  - (C) 250ppm
  - (D) 2.5ppm
- vii. The settling velocity of inorganic particles in sedimentation tank of a water treatment plant is govern by
  - (A) Darcy's law
  - (B) Stoke's law
  - (C) Dupuit's law
  - (D) None of the above



- viii. The water to be used for boilers should preferably be  
(A) Hard  
(B) Soft  
(C) Potable  
(D) None of the above
- ix. The maximum permissible fluoride content in drinking water is  
(A) 50mg/l  
(B) 1mg/l  
(C) 5mg/l  
(D) 20mg/l
- x. Aeration of water is employed to remove  
(A) Iron  
(B) Hardness  
(C) Oxygen  
(D) Alkalinity
- xi. Two system of supply of water are..... and.....
- xii. The population of newly and rapidly developing city is forecast by.....method
- xiii. The population growth curve is.....shaped curve
- xiv. The bacteria which may survive with or without free oxygen are called.....
- xv. The most widely used coagulant in water treatment plant is.....
- xvi. Colour of water is expressed in terms of.....
- xvii. The temporary hardness occurs in water due to presence of .....
- xviii. Distribution of wash water is provided in.....sand filter
- xix. The resistance of water to the passage of light through it is known as.....
- xx. The method adopted for removing debris, wood, bushes from water is known as.....
- xxi. The mass curve is used to work out the storage capacity of a reservoir. (True/False)
- xxii. EDTA method is used to determine hardness of water. (True/False)
- xxiii. Fluoride in water in excess is responsible for a disease called blue baby syndrome. (True/False)
- xxiv. BOD of safe drinking water is zero. (True/False)
- xxv. The killing of pathogenic bacteria is called sterilization. (True/False)

**PART B: All the questions are compulsory**

**MARK-(45)**

**Q2.** Explain the different methods of forecasting future population of a city  
(10)

**OR**



Explain briefly the various water demands of a typical town or a city. Discuss the factors influence per capita demand? (10)

**Q3.** i. Explain how to determine the reservoir capacity for a specific yield, from the mass inflow curved. (6)

ii. Find the diameter of particles with specific gravity of 1.4 removed in a tank having a surface area of 300 sq. m and treating 10 million litres of water per day. Assume temperature as 20° C. (4)

**OR**

i. Explain the mechanism of floc formation (4)

ii. Classify various type of filter. What ate the action takes place during filtration (6)

**Q4.** Explain the terms: (2\*10=20)

Specific yield, design period, demand curve, settling velocity, surface loading, alum, nitrogen and its compounds, hardness of water, pH value, flow through period.

**Q5.** For a small town having projected population of 50,000 residing over an area of 20 hectares, find the design discharge for the combined sewer for the following data: Rate of water supply =150 litres per capita per day, Runoff coefficient =0.3, Time of concentration = 10 min. (5)

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