Reg. No. : | | | | | | | | | | |

Question Paper Code: 46103

B.E. / B.Tech. DEGREE EXAMINATION, NOV 2019

Sixth Semester

Civil Engineering

14UCE603- WASTE WATER ENGINEERING

(Regulation 2014)

Duration: Three hours Maximum: 100 Marks

Answer ALL Questions

PART A - (10 x 1 = 10 Marks)

1. Sewage treatment works are normally designed for a design period of

   (a) 40-50 years (b) 30-40 years
   (c) 15-20 years (d) 5-10 years

2. The liquid waste originating from residential and industrial buildings, are collectively called

   (a) Domestic sewage (b) Combined sewage
   (c) Sanitary sewage (d) None of these

3. The detention period adopted for grit chamber is of the order of

   (a) 1 minute (b) 5 minute
   (c) 2-4 hours (d) 12 hours

4. Corrosion in pipes will be less in

   (a) Plastic pipes (b) iron pipes (c) both (a) and (b) (d) none of these

5. The detention time in grit chamber is equal to

   (a) 20 sec (b) 1 min (c) 40-60 sec (d) 30 min

6. Detention period in a septic is of the order of

(a) 2-6 hours (b) 4-8 hours
(c) 12-36 hours (d) 2-4 days

7. The most common method of waste water disposal is

(a) evaporation (b) dilution in surface water
(c) rapid infiltration (d) application for irrigation

8. Disposal of sewage for sewage farming will be most favorable, where

(a) river runs with very low flow (b) climate is wet and rate of evaporation low
(c) area is hilly (d) all the above

9. Biogas is normally composed of

(a) 65% methane and 35% CO_2 (b) 35% methane and 65% CO_2
(c) 40% methane and 60% CO_2 (d) none of these

10. The phenomena by which soil is clogging with sewage matter is called

(a) sewage farming (b) sewage sickness
(c) sewage bulking (d) trickling filter

PART - B (5 x 2 = 10 Marks)

11. List the factors affecting sludge digestion.

12. Define Sewage farming.

13. Define Sludge volume index.

14. Define the term "Dilution Factor".

15. Illustrate Population equivalent.

PART - C (5 x 16 = 80 Marks)

16. (a) With neat diagram explain the four principal systems adopted in plumbing of drainage work in a building. (16)

Or

(b) (i) List the various measures that should be considered for corrosion of sewers. (8)

(ii) Compare the one pipe and two pipe plumbing systems. (8)

17. (a) Design a circular sedimentation tank for primary treatment of domestic sewage for a primary treatment of domestic sewage for a flow of 10mld.Assume suitable values of hydraulic retention time and surface loading rate suitably. (16)

Or

(b) (i) List and explain the various types of Screens. (8)

(ii) Illustrate Septic tank. (8)

18. (a) (i) Explain the theory of Activated sludge process (8)

(ii) List and explain merits and demerits of Trickling Filters. (8)

Or

(b) Write the comparison between conventional and high rate trickling filter. (16)

19. (a) What do you understand by self purification property of a stream? Explain the factors affecting this property? (16)

Or

(b) Draw a typical oxygen sag curve and explain its meaning. (16)

20. (a) Briefly explain the various stages in sludge digestion process. (16)

Or

(b) (i) Describe in detail about the sludge thickening process. (8)

(ii) Write the various disposal methods available to dispose the dewatered Sludge. (8)