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**Question Paper Code: 46203**

B.E. / B.Tech. DEGREE EXAMINATION, NOV 2018

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)

- The treatment unit which is not working on oxidation alone is
  - Aeration tank
  - Contact beds
  - Trickling Filters
  - Anaerobic Lagoons
- The liquid waste originating from residential and industrial buildings, are collectively called
  - Domestic sewage
  - Combined sewage
  - Sanitary sewage
  - None of these
- The detention period for plain sedimentation water tanks, is usually
  - 16 to 24 hours
  - 8 to 16 hours
  - 4 to 8 hours
  - 24 to 36 hours
- Which of the following units work on the principle or anaerobic decomposition
  - Sedimentation tanks
  - Trickling filters
  - Sludge digestion tank
  - Activated sludge plant
- The maximum efficiency of BOD removal is achieved in
  - Oxidation ditch
  - Oxidation pond
  - Aerated lagoon
  - Trickling filter

6. Recirculation ratio is equal to
- (a) sewage recirculated/volume of sewage
  - (b) refuse recirculated/volume of sewage
  - (c) both (a) and (b)
  - (d) none of these
7. Dilution method of disposing off sewage, is not preferred to
- (a) when sewage is fresh
  - (b) when diluting water is used for water supply near the point of sewage disposed
  - (c) when diluting water has high dissolved oxygen content
  - (d) when the diluting water is having flow currents
8. The self-cleansing velocity of water flowing through pipe lines, is
- (a) 2 metres/sec
  - (b) 1 metre/sec
  - (c) 0.5 metre/sec
  - (d) 0.25 metre/sec
9. The term sludge age is associated with
- (a) sedimentation
  - (b) aeration
  - (c) sludge drying
  - (d) filtration
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 recirculation ratio.
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) (i) Write short note on screening process in waste water treatment. (10)
- (ii) How will you dispose the materials separated by screening? (6)
- Or
- (b) (i) What is meant by sedimentation tank in a treatment system? Explain in detail the various types of sedimentation tank with neat sketches. (10)
- (ii) Tabulate the advantages and disadvantages of ASP and Trickling Filters. (6)
18. (a) Describe the activated sludge process with a flowchart. (16)
- Or
- (b) (i) Enumerate the advantages and disadvantages of the activated Sludge process. (8)
- (ii) Explain the types of Aeration. (8)
19. (a) State the objectives of sewage disposal and list the methods of disposal and explain The same. (16)
- Or
- (b) (i) Explain the zones of pollution in a stream (8)
- (ii) Explain Sewage sickness and list few methods of its preventive measures. (8)
20. (a) (i) Briefly explain the various stages in sludge digestion process. (10)
- (ii) What are the factor affecting sludge digestion process. (6)
- 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)

