Reg. No. :

Question Paper Code: 55014

B.E. / B.Tech. DEGREE EXAMINATION, NOV 2017

Fifth Semester

Civil Engineering

15UCE504 - ENVIRONMENTAL ENGINEERING

(Regulation 2015)

Duration: Three hours   Maximum: 100 Marks

Answer ALL Questions

PART A - (10 x 1 = 10 Marks)

1. The design period for water supply project is taken as

    (a) 5-10 years   (b) 10-15 years   (c) 50-60 years   (d) 20-30 years

2. The joint used in cast-iron pipes for water supply is generally

    (a) Flanged   (b) Welded
    (c) Spigot and socket (lead)   (d) Spigot and socket (turned and bored)

3. In the design of sedimentation tank, the essential factor to be considered is

    (a) Surface loading   (b) depth of tank
    (c) turbidity   (d) concentration of suspended solids

4. Zeolite is

    (a) A naturally occurring salt   (b) Hydrated silica
    (c) Dehydrated calcium silicate   (d) Hydrated alumino- silicate

5. For internal water distribution system within building, the most suitable material amongst the given four is

    (a) steel pipes   (b) C.I pipes   (c) R.C.C pipes   (d) G.I pipes

6. The valve which allows unidirectional flow of water in a pipe is called

    (a) reflux valve   (b) gatevalve   (c) sluicevalve   (d) washout valve

7. Manhole covers are made circular

  (a) for architectural reasons
  (b) for strengthen the cover
  (c) To prevent falling of the covert into the manhole
  (d) To make the entry convenient

8. Partially oxidised stale sewage will contain nitrogen mainly in the form of

  (a) nitrites   (b) nitrates   (c) free ammonia   (d) (a) and (c) both

9. The gas, which is evolved in a sludge digestion tank, is mainly composed of

  (a) nitrogen   (b) ammonia   (c) hydrogensulphide   (d) methane

10. As compared to fresh river water, sea water contains

  (a) 10% more oxygen   (b) 20% more oxygen
  (c) 10% less oxygen   (d) 20% less oxygen

<div align="center">PART - B (5 x 2 = 10 Marks)</div>

11. What are the objectives of water supply system?

12. Write the theory of disinfection.

13. Mention the methods of leak detection.

14. Differentiate one pipe system and two pipe system.

15. Define sewage sickness.

<div align="center">PART - C (5 x 16 = 80 Marks)</div>

16. (a) (i) In two periods each of 20 years, a city has grown from 40,000 to 1,60,000 and then 2,80,000. Determine the Saturation population, the equation of the logistic curve and the expected population after the next 15 years. (12)

     (ii) Enlist the factors influencing the selection of source for a water supply system. (4)

<div align="center">Or</div>

  (b) Explain the river Intake with neat sketch. (16)

17. (a) (i) Explain the process of back washing in Rapid gravity filter with neat sketch. (8)

     (ii) Discuss the Chlorination process. (8)

<div align="center">Or</div>

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(b) (i) Discuss about Zeolite process of water softening. (8)

(ii) How iron and manganese should be removed from water? (8)

18. (a) (i) What are the requirements of good distribution system? (6)

(ii) Explain Hardy –cross method in network design. (10)

Or

(b) (i) Explain house service connection with neat sketch. (8)

(ii) How to find out the leakage in water distribution system? Explain it. (8)

19. (a) (i) Explain any four chemical characteristics of waste water. (8)

(ii) How to estimate the quantity of sanitary sewage? (8)

Or

(b) Discuss the following with neat sketches:

(i) deep manhole (8)

(ii) Clean out (4)

(iii) lamp hole (4)

20. (a) (i) What is activated sludge? Explain the process microbiology of ASP. (8)

(ii) Discuss the various stages involved in sludge digestion process. (8)

Or

(b) (i) Discuss the preventive measures taken for sewage sickness. (8)

(ii) What is sewage farming? List the crops to be grown and not to be grown. Write the limitations and precautionary measures to be taken in sewage farming. (8)

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