CV503

M S RAMAIAH INSTITUTE OF TECHNOLOGY

(AUTONOMOUS INSTITUTE, AFFILIATED TO VTU)
BANGALORE – 560 054
SEMESTER END EXAMINATIONS – JANUARY 2015

Course & Branch	: **B.E: Civil Engineering**	**Semester**	: **V**
Subject	: **Environmental Engineering -II**	**Max. Marks**	: **100**
Subject Code	: **CV503**	**Duration**	: **3 Hrs**

Instructions to the Candidates:
- Answer one full question from each unit.
- Assume suitable data wherever necessary.
- Mobiles are not allowed.

UNIT – I

1. a) Define dry weather flow and explain the factors affecting dry weather flow. (10)

   b) Explain different types of sewerage systems and give their merits and demerits. (10)

2. a) Calculate dry and wet weather flow of city having population of 2 lakhs, area to be served is 450 hectares, water supply rate is 200lpcd, intensity of rainfall is 1.5cm/hr, average impermeability factor is 0.6; assume that 80% of waster supplied reaches the sewer. (08)

   b) Draw sketches of hourly variation of flow of sewage and explain its significance. (08)

   c) Define time of concentration and impermeability factor. (04)

UNIT – II

3. a) Design combined sewer of a circular section with N=0.013 running half full to serve a town with the following data, population= 50000, area to be served= 120 hectares, rate of water supply= 150 lpcd, average sewage discharge 70% of water supplied, peak factor= 3, slope of sewer= 1in 200, coefficient of run off area=0.5, intensity of rainfall= 50 mm/hr. check the velocity. (10)

   b) Explain self cleaning velocity and non scouring velocity, giving desirable values for each. Also list the effects of variation of discharge on velocity in sewers. (10)

4. a) Design a circular sewer section to serve a particular area using following data (10)
   Population- 2Lakhs
   Rate of water supply -150 liters/ capita/day
   Peak flow factor- 2

Slope of sewer- 1/300

Mannings coefficient N – 0.01

The sewer has to run full at peak discharge assume 90% of sewage.

b) What are the factors to be considered for selecting sewer material? Give the advantages of cement concrete sewer? (10)

UNIT – III

5. a) Sketch and explain aerobic and anaerobic decomposition process in wastewater. (10)

b) What are sewer appurtenances? With a sketch explain the functioning of a drop manhole. (10)

6. a) With sketch explain two types of catch basins? (05)

b) Define BOD and COD, and give their applications. (05)

c) The BOD of sewage incubated for one day at 30° C has been found to be 100 mg/l. What will be the 5 day 20° C BOD? Assume K=0.012 at 20° C. (05)

d) Define sewage sampling? What are the different methods of sewage sampling briefly explain. (05)

UNIT – IV

7. a) Define grit chamber? What are the different types of grit chamber? With a neat sketch explain aerated grit chamber give their advantage and disadvantages. (10)

b) Design a circular sedimentation tank for a flow of 10MLD take bottom slop 1 in 10. (10)

8. a) Draw a flow diagram of a conventional wastewater treatment plant and label its parts, mention the purpose of each unit. (10)

b) Explain ASP and its modification with sketches. (10)

UNIT – V

9. a) What are the characteristics of a good trap? Sketch a gully trap and explain its functions. (10)

b) With a sketch explain the working of flushing cistern. (10)

10. a) With a sketch explain two pipe system of plumbing systems. (10)

b) Discuss the basic principles adopted in designing house drainage system. (10)

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