Old Test Paper Session 2017-18

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Subject Environmental Engineering –II
Semester –VI, Test-I (2017-18)

Q.1: Describe the conservancy system and water carriage system. What are the relative advantages and disadvantages of the two systems?(3)

Q. 2: A population of 45,000 is residing in a town having an area of 60 hectares. If the average coefficient of runoff for this area is   0.45, and the time of concentration of the design rain is 30 minutes, calculate the discharge for which the sewers of a proposed combined system will be designed for the town in question. Make suitable assumptions where needed.   (3)

Q3:Write notes on any two: (4)
   a) B.O.D   b) C.O.D and Solids   c) sewage terms

Solution

Ans. 1:- and 3-: refers text book.
Ans. 2:-

Population=45000, Assume Per capita water supply=120lit/person/day & 80% of water supply
Therefore average dily water supply= (80/100)*45000*120 lit/day
Or   = (80/100)*45000*120/(1000*24*60*60) cumecs
    =0.05 cumecs
Assuming, maximum sewage discharge to be 3 times of the average.
Max. Discharge for which sewer should be designed running full = 3*0.05 = 0.15 cumecs
The storm water discharge can be computed by using rational formula:

$$Q = \frac{1}{36} K \, P_c A$$

Where, $P_c = \frac{100}{T+20}$

Or $P_c = 100/(30+20) = 2$ cm/hr

Therefore,

$$Q = \frac{1}{36} 0.45 * 2 * 60 = 1.5 \text{ cumecs}$$

Hence, the total peak discharges for which the sewer of the combined system should be designed:
= Max. sewage discharge + Max. storm discharge   =0.15+1.5
= 1.65 cumecs. **Ans**