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Roll No .....

CE-603

B.E. VI Semester

Examination, June 2017

Environmental Engineering - I

Time : Three Hours

Maximum Marks : 70

Note: i) Attempt any five questions.
ii) All qeustions carry equal marks.
iii) Assume any missing data if required.

1. The average increase in the population of a town per decade over a period of 6 decades was 4100 and the average percentage increase was 12%. If the population at the end of the sixth decade was 220000 estimates the population two decades later by
   i) the arithmetic increase method and
   ii) the geometric increase method

2. In two periods each of 20 years a city population grew from 30000 to 172000 to 292000. Find Saturation Population, the coefficient of logistic equation and the expected population in the next 20 years.

3. Describe in brief various important test conducted for chemical examination of water.

4. Write short notes on the following:
   a) Turbidity
   b) Chlorides and nitrites
   c) Virus and bacteria and
   d) Free ammonia and albuminoid ammonia

5. Give a clear comparison between slow sand filter and rapid sand filter.

6. Design a rapid sand filtration unit for population of 10 water supply. Assume the following: rate of filtration: $3 \times 10^5 m^3$/ha/day; amount of wash water: 5% of filtered water per day; filter dimensions of each unit: 17.5m × 10m; the filter needs back washing once in 24 hours. Assume any other data is needed.

7. Write short notes on Hardy Cross-method and Fire hydrants

8. Answer any four of the following :
   a) What do you understand by "Peak hour demand"? What are the effects of these variations on the design of various units of a water supply scheme?
   b) What do you understand by e-Coli test? How do you determine its presence in water?
   c) Enumerate the chemicals which are used for coagulation. Discuss their comparatives merit and demerits.
   d) How you can detect and prevent losses in water supply distribution system?
   e) What are the principles adopted in providing an efficient and economical system of drainage in building? Explain.
   f) Critically discuss one and two pipe system of plumbing.

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