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B. Tech. [ENE]

FIFTH SEMESTER

FEB − 2019

SUPPLEMENTARY EXAMINATION

EN 307 PLANNING AND DESIGN OF ENVIRONMENTAL

ENGINEERING WORKS

Duration: 3 Hours

Maximum Marks: 40

Note:	Answer ALL questions. All questions carry equal marks. Assume suitable missing data, if any.

Q.1. Answer ALL the following questions:
   a. Discuss the role of planning in achieving sustainable development.
   b. Discuss the concept of Environmental Management.
   c. Role of population forecast in design of environmental engineering works.
   d. Write a note on modeling for planning.
   e. Discuss preventive maintenance works.

Q.2. Attempt any TWO questions out of the following:
   a. Discuss the effect of land degradation on soil fertility.
   b. Discuss the effect of overcrowding on environmental engineering works.
   c. Discuss the factors affecting per capita demand of water.

Q.3. Attempt any TWO questions out of the following:
   a. Discuss the effects of use of land-resource as a waste disposal site.
   b. How are public utilities managed?
   c. Discuss the principle and theory of cyclone separator for control of air pollutants.

Q.4. Attempt any TWO questions out of the following:
   a. Water is required to be transported from an overhead tank to an urban area 800 m apart. Determine the diameter of pipe required for transporting water at a discharge rate of 12 litres/sec ensuring a velocity of 0.75 m/s using nomogram (printed overleaf). Also determine the head loss.
   b. Predict the population for the year 2031, and 2041 from the following population data using arithmetic increase method and geometric increase method.

Year	1961	1971	1981	1991	2001	2011
Population	8,50,000	10,10,000	12,00,000	17,00,000	20,00,000	26,00,000

   d. Water is to be lifted from a tube well to an overhead tank. Find the BHP of the pumping unit for the following data:
   • Discharge from tube well 60 litre/sec

- R.L. of ground 201.50 m
- R.L. of water in tube well 180.00 m
- Depression head during pumping 4 m
- R.L. of bottom of overhead tank 220.50 m
- Depth of water in tank 3.5 m
- Length of rising main or pipe 100 m
- Co-efficient of friction 0.01
- Velocity of water in rising main 2 m /sec

Q.5. Attempt any TWO questions out of the following:

a. With the help of a neat sketch, explain the principle, construction and working of a bag filter.

b. Discuss the factors affecting population growth.
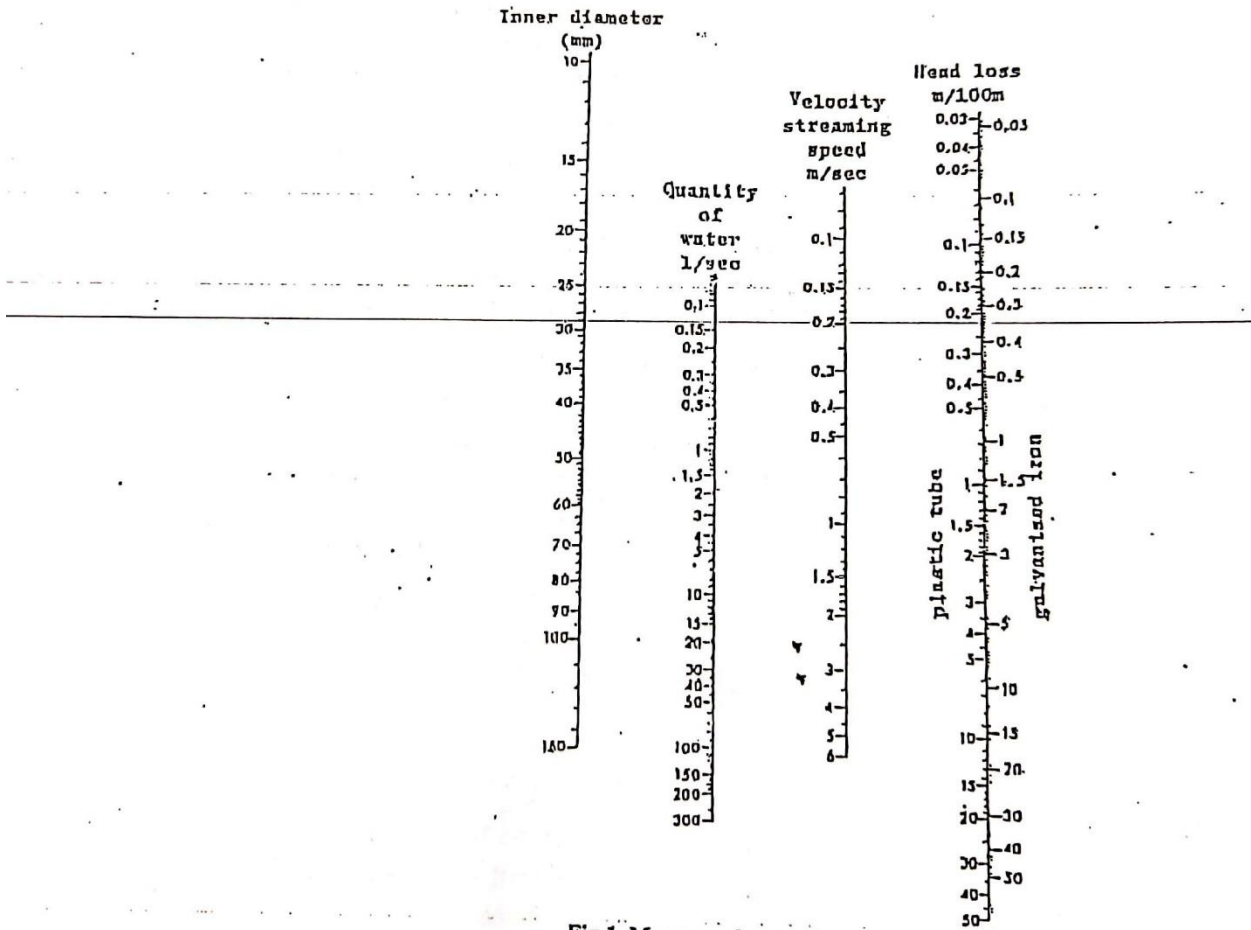
c. Write a note on Zoning method of urban planning.

Fig 1. Monograph for PE and GI Pipes