Total No. of printed pages = 3

CT-506/EE/5th Sem/2017/M

SUB-ENVIRONMENTAL ENGINEERING

Full Marks – 70

Pass Marks – 28

Time – Three hours.

The figures in the margin indicate full marks for the questions.

Answer any *five* questions.

1. Explain in brief the different methods used for predicting the future population of a city. 14

2. (a) Determine the size of a circular sewer for a discharge of 500 liters per second running half full. Assume bed slope as 0.0001 and N = 0.015 7

   (b) Explain any one type of automatic raingauge. 7

[Turn over

3. (a) Write a short note on the wastage of water in public supplies. 7

(b) Discuss the relative merits and demerits of the separate and combined system of sewage. 7

4. (a) Design a tube well for the following data : 7

(i) Yield required = 0.08 m^3/sec

(ii) Thickness of confined aquifer = 30m

(iii) Radius of drawdown = 300m

(iv) Permeability coefficient = 60m / day

(v) Draw down = 5m.

(b) Differentiate between the following : 7

(i) Temporary and permanent hardness

(ii) Free ammonia and albuminoid ammonia.

5. (a) Find the settling velocity of a discrete particle in water under conditions when Reynold's number is less than 0.5. The diameter and specific gravity of the particle is 0.05mm and 2.65 respectively. Water temperature is 20°C. 7

(b) Design six slow sand filter beds from the following data : 7

Population to be served = 50,000 persons

Per capita demand = 150 liters / head / day

Rate of filtration = 180 liters / hr / sq.m

Length of each bed = twice the width.

Assume maximum demand as 1.8 times the average daily demands. Also assume that one unit, out of six will be kept as stand by.

6. Write short notes on any of *two* : 7×2=14

(i) Layout of distribution systems

(ii) Water screening

(iii) Break point chlorination

(iv) Setting velocity of discrete particles.