Mid-West University

Examinations Management Office

Semester End Examinations 2081

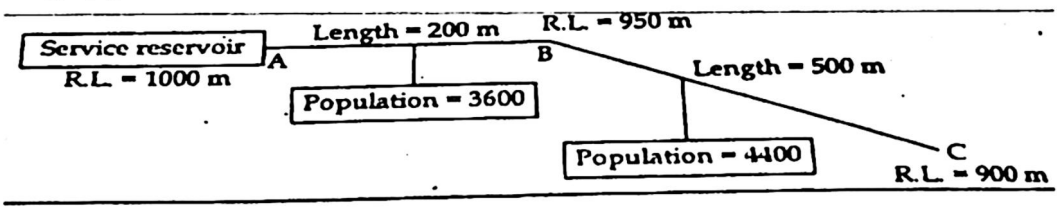
Bachelor level/ B.E. Civil/ 5th Semester — Full Marks: 50

Time: 3 hours — Pass Marks: 25

Subject: Water Supply & Sanitary Engineering (CE453)

- *Attempt all the questions*
- *Figures in the margin indicate full marks.*
- *Assume suitable values, with a stipulation, if necessary.*
- *Candidates are required to answer the questions in their own words as far as possible.*

1. Briefly describe the components of water supply system and their functions. **[4]**
2. Define potable water. Describe about the infiltration gallery. **[1+3]**
3. What do you mean by water vector disease? How will you perform the turbidity test of water? Indicate some water quality standard for drinking water recommended by WHO. **[1+2+1]**
4. Intake structure is necessary for water supply scheme, Why? Enlist the factor that should be consider for selection the intake. Draw the plan and elevation of spring intake. **[1+1+2]**
5. What do you mean by aeration of Water? What are the advantages and dis-advantage of Grid-iron system of water supply? Why valve fittings are necessary in the pipe connections and draw diagram of sluice, reflux and air relief valve fittings. **[1+1+2]**
6. What do you mean by BPT tank and public stand post? Describe briefly the process of pipe laying in water supply system? **[1+3]**
7. You have been appointed as a designer to design the water supply system of a village in Surkhet district. The survey was carried out in 2002 A.D. The survey data are as follows:
   i) Population 900 ii) Number of cows 120 iii) Number of goats 200 iv) Number of dogs 100 v) One secondary school with students 450 vi) There is one V.D.C. office and one hospital without bed in the village. Assume annual population growth rate as 1.5%. The base period is 2 years and the design period is 15 years. Calculate the total water demand in the design year. **[5]**
8. Design pipeline AB and BC for the water distribution network as shown below. Take per capita



demand of water 160 lpcd. Assume Peak factor =3, Hazen William's constant C=100. The residual head any point in the distribution system should not be less than 10m. **[5]**

9. Design rectangular and circular sedimentation tank for a town to purify the water of a rate of 8MLD. Assume all necessary data. **[6]**
10. Average water consumption rate is 150lpcd in an urban area. Design a SSF for the community having the population of 10000 at the base year 2068. **[6]**
11. There are three samples A, B and C of water having PH of 4.4, 5.4 and 6.4 respectively. Calculate how many times sample A is acidic then sample C. **[4]**

The End