ARDR/2KTT/OT – 12093

B. E. Third Semester (Civil Engineering)/BECV_18-19_Rev_SOE_ CV-201 Examination

Course Code : CV 2207 **Course Name : Water Supply Engineering**

Time : 2 Hours] [Max. Marks : 40

Instructions to Candidates :—

(1) Attempt any **Four** questions out of **Six**.
(2) All questions carry **Ten** marks.
(3) Assume suitable data wherever necessary.
(4) Diagrams and chemical equations should be given wherever necessary.
(5) Illustrate your answers wherever necessary with the help of neat sketches.
(6) Use of Logarithmic tables, non – programmable calculator, Steam tables, Mollier's chart, Drawing instruments, Thermodynamic tables for moist air, Psychrometric charts and Refrigeration charts is permitted.

1. (A) Solve any **One** : 4(CO1)

(A1) Explain with sketch hourly variation in water demand.

(A2) Explain any six factors affecting water demand.

(B) Solve any **One** : 3(CO1)

(B1) Write note on design period of water supply scheme.

(B2) Explain comparative graphical method of population forecasting.

(C) Solve any **One** : 3(CO1)

(C1) State importance and necessity of water supply scheme.

(C2) Explain public water demand.

2. (A) Solve any **One** : 4(CO2)

(A1) Name any four valves in water pipe line. Explain any one.

(A2) State–Darcy's formula, Manning's formula and Hazzen Willam's formula for design of rising main. Also give approximate range of constants in each.

(B) Solve any **One** : 3(CO2)

(B1) State requirements of a good pipe joint.

(B2) Write a note on steel pipe in water supply.

(C) Solve any **One** : 3(CO2)

(C1) Explain with sketch parts of centrifugal pump.

(C2) Explain canal intake with sketch.

3. (A) Solve any **One** : 4(CO3)

(A1) State objectives of water treatment. Name various units in conventional water treatment and draw flow diagram. Of water treatment plant.

(A2) What is flocculation ? State design parameters of flocculator. Sketch flocculator.

(B) Solve any **One** : 3(CO3)

(B1) Explain E-coil test in bacteriological analysis.

(B2) Explain diffused air aeration method.

(C) Solve any **One** : 3(CO3)

(C1) Write note on Hardness of water.

(C2) Explain Jackson candle turbidity test.

4. (A) Solve any **One** : 4(CO3)

(A1) Explain with sketch working of clariflocculator.

(A2) Differentiate between slow and rapid sand filter.

(B) Solve any **One** : 3(CO3)

(B1) Explain inlet arrangements tank.

(B2) Explain formation of mud balls in rapid sand filter.

(C) Solve any **One** : 3(CO3)

(C1) Explain hopper bottom type sedimentation tank.

(C2) Draaw section through rapid sand filter.

5. (A) Solve any **One** : 4(CO3,4)

(A1) Define chlorination. Write chemical reactions when chlorine is added to water. State effect of Ph in chlorination.

(A2) Name different water distribution systems. Explain pumping system.

(B) Solve any **One** : 3(CO3,4)

(B1) Explain mechanism of disinfection.

(B2) State criteria for good disinfectant.

(C) Solve any **One** : 3(CO3,4)

(C1) Draw section through storage reservoir.

(C2) Write note on Ring system of water distribution layout.

6. (A) Solve any **One** : 4(CO5)

(A1) Explain different methods of collection of solid waste from locality.

(A2) Explain sanitary landfill method of solid waste disposal.

(B) Solve any **One** : 3(CO5)

(B1) Write a note on reuse of solid waste.

(B2) Explain typical composition of solid waste.

(C) Solve any **One** : 3(CO5)

(C1) Write a note on generation of solid waste.

(C2) Explain transportation of solid waste.