



ITU

CIVIL ENGINEERING FACULTY HYDRAULICS DIVISION
HYDROLOGY

Examples –1 Introduction to Hydrology

1. Annual precipitation in a particular year was measured to be 70 cm over a lake with 200 km^2 surface area. The mean annual inflow and outflow discharges by the rivers to this lake is given as $1.20 \text{ m}^3/\text{s}$ and $127 \text{ m}^3/\text{s}$, respectively. A 9 cm rise was observed for that year. The leakage from the lake bottom is negligibly small. Considering given data calculate the annual evaporation depth of the lake for that particular year.
2. The reservoir capacity of a small dam constructed to supply water to a nearby town is $14 \times 10^6 \text{ m}^3$. At the beginning of February there is $8 \times 10^6 \text{ m}^3$ water in the reservoir. The precipitation and evaporation depths for this month are given as 120 mm and 35 mm, respectively. The inflow during February is $6.7 \times 10^6 \text{ m}^3$, and water demand of the town is $0.18 \times 10^6 \text{ m}^3$. If the surface area of the reservoir is 1.1 km^2 , calculate the water volume that is to be spilled from the dam for February after the water demand of the town is supplied.
3. The water volume in Demirköprü Dam reservoir at the beginning of July 1972 is $404 \times 10^6 \text{ m}^3$. At the end of the same month the remaining water volume in the reservoir is $359 \times 10^6 \text{ m}^3$. During this month the water volume spent for energy production is $58 \times 10^6 \text{ m}^3$ and surface evaporation is $9 \times 10^6 \text{ m}^3$. Calculate the mean discharge carried by Gediz River to the dam for this month.