所別：<u>水文科學研究所碩士班 一般生</u> 科目：<u>水文學(含地表水，地下水)</u>

中央大學 95 年度碩士班研究生入學試題 水文科學研究所 不分組 水文學

1. Define and explain the following terms (35%)
   (a) Bowen ratio (5%)
   (b) Unconfined aquifer (5%)
   (c) Residence time (5%)
   (d) Hydraulic radius (5%)
   (e) Precipitation (5%)
   (f) Transpiration (5%)
   (g) Runoff ratio (5%)

2. Describe the procedures of at least two methods for base flow separation. (10%)

3. Discharge rate of a 2-hr unit hydrograph was given in the following table. Compute the hourly hydrograph from a 4-hr design storm having a constant excess rainfall rate of 1.5 inch/hr. (10%)

Time (hr)	0	1	2	3	4	5	6
disharge (cfs)	0	40	75	110	80	40	0

4. A rainfall event in a 150 km² watershed was given in the following table. If the Φ index was 10 mm/hr, find the direct runoff depth in mm. (10%)

Time (min)	0-30	30-60	60-90	90-120
Rainfall (mm)	20	40	40	20

5. Describe the water balance approach for estimating the evaporation of a reservoir. (10%)

6. Derive the Muskingum method for hydrograph routing starting from the assumption of S=K[xI+(1-x)O], where S = the storage of a reach, I = inflow rate, O = outflow rate, x = a weighting factor, K = the storage constant of the reach. Also explain the physical meaning of K in this routing approach. (15%)

7. Describe the Darcy's law and its limitation. (10%)