ET-535(A)

B.Tech. Civil (Construction Management)

Term-End Examination

December, 2012

ET-535(A) : ELEMENTARY HYDROLOGY

Time : 3 hours   *Maximum Marks : 70*

*Note :   Q. 1 is **compulsory**, and carries **10** marks. Attempt any four from the remaining questions. Draw neat and labeled diagram in support of answer. Use of scientific calculator is **permitted**.*

1.   Define the following terms :   5x2=10

   (a)   Precipitation

   (b)   Percolation

   (c)   Evapo-transpiration

   (d)   Surface runoff

   (e)   Hyetograph

2.   (a)   Draw block representation of a hydrologic   5
         system.

(b)   The isohyets due to a storm in a catchment   **10**
has the following data. Estimate the mean
precipitation due to the storm.

Isohyets (cm)	Area (km^2)
Station - 12	30
12 - 10	140
10 - 8	80
8 - 6	180
6 - 4	20

3.   (a)   How will you estimate missing rainfall data   **8**
at a given rain-gauge station?

(b)   Describe double-mass curve technique for   **7**
consistency test of rainfall data.

4.   What is difference between evaporation and
transpiration ? Describe the factors affecting
evaporation in brief.   **6+9=15**

5.   (a)   Describe measurement of infiltration using   **10**
flooding type infiltrometers. What are the
disadvantages of this method ?

(b)   Explain briefly the Horton's equation for   **5**
infiltration.

6.   (a)   Explain the difference between direct runoff   **7**
and baseflow; and point out usefulness of
baseflow.

(b)   Draw a typical flood hydrograph and   8
      explain its components.

7.   (a)   List direct and indirect methods for   7
           determination of discharge. Describe the
           Area-Velocity method.

     (b)   Given the ordinates of a 4-hr unit   8
           hydrograph as below derive the ordinates
           of a 12-hr unit hydrograph for the same
           catchment.

Time (h)	0	4	8	12	16	20	24	28	32	36	40	44
Ordinate of 4-hr UH (m^3/s)	0	20	80	130	150	130	90	52	27	15	5	0

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