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ET-535(A)

B.Tech. Civil (Construction Management)

Term-End Examination

June, 2012

01835

ET-535(A) : ELEMENTARY HYDROLOGY

Time : 3 hours *Maximum Marks : 70*

Note : *All questions **carry** equal marks. Draw neat sketch wherever required. Attempt **any five** questions. The answer shall be in your own language.*

1. (a) Describe and draw the hydrologic cycle and explain at least five hydrologic processes. 8
   (b) Give a brief account of estimated world water quantities. 6

2. (a) Differentiate between non - recording and recording type rain - gauges. Draw Symons'gauge used in India with dimensions. 2+5=7
   (b) What are the methods of estimation of average depth of precipitation over a catchment. Discuss any one method giving example. 7

3. (a) Discuss the factors affecting evaporation from a water body. 7
   (b) Describe the methods commonly used for measuring the evapotranspiration of a given vegetation type. 7

4. (a) Explain the procedure for measurement of infiltration characteristics of soil using double ring infiltrometer. 8

(b) Define the ϕ- index and W - index used in calculation of infiltration. 6

5. (a) Give a brief account of surface water resources of India. 5

(b) Name the direct and indirect determination of discharge and explain the method of discharge measurement using notches and weirs. 9

6. (a) What are the assumptions made in derivation of unit hydrograph ? 4

(b) The ordinates of a 6 -h unit hydrograph of a catchment is given below. 10

Time (h)	0	3	6	9	12	15	18	21	24	27
Ordinate of 6-h UH	0	15	45	100	60	35	20	10	5	0

Derive the flood hydrograph in the catchment due to storm given below :

Time from start of storm (h)	0	6	12	18
Accumulated rainfall (cm)	0	3.5	9.5	14

The storm loss rate may taken as 0.25 cm/hr and base flow can be assumed to be $15 m^3/s$.

7. Write short notes on ***any four*** of the following : **3½x4=14**

(a) Annual Average Rainfall in India

(b) Snowfall water equivalent

(c) Thiessen Polygons method

(d) Factors affecting evaporation

(e) Flow duration curve

(f) Rating curve for discharge measurement

(g) Backwater effect