B.Tech. Civil (Construction Management)

Term-End Examination

December, 2017

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ET-535(A) : ELEMENTARY HYDROLOGY

Time : 3 hours　　　　　　*Maximum Marks : 70*

Note : *Attempt any* **five** *questions. Give neat sketches wherever necessary.*

1. (a) Explain Absolute Humidity, Partial Pressure of Water Vapour, Specific Humidity and Net Radiation. *10*

   (b) Discuss in brief, stream gauging procedures. *4*

2. (a) Draw a neat diagram depicting the structure of our atmosphere. *7*

   (b) Explain flooding type infiltrometer and ring infiltrometer. *7*

3. Draw a sketch of the hydrologic cycle. Explain the various important processes that make up the cycle. *14*

4. (a) Explain the Area Velocity method and Slope Area method of discharge measurement. *10*

(b) Define Unit Hydrograph and Synthetic Unit Hydrograph. *4*

5. (a) Derive an expression for the amount of precipitable water in a given air column. *10*

(b) Discuss Khosla's formula for calculating runoff coefficient of a basin. *4*

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

(b) Derive the formula used in the Muskingum method of channel routing. *10*

7. (a) Derive a general relationship between the water level in a lake and the inflow/outflow from the lake depending on time. *7*

(b) A lake has a surface area of $7 \cdot 0 \times 10^5 \text{ m}^2$. During a given month, the mean inflow to the lake was $2 \cdot 5 \text{ m}^3/\text{s}$. The increase in stored lake volume was observed to be $6 \cdot 5 \times 10^5 \text{ m}^3$. Precipitation during the same month was 250 mm and evaporation was 420 mm. Calculate the outflow from the lake for the same month. *7*