|ET-535(A)|

B.Tech. Civil (Construction Management)
Term-End Examination
June, 2016

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ET-535(A) : ELEMENTARY HYDROLOGY

Time : 3 hours   *Maximum Marks : 70*

Note : *All questions carry equal marks. Attempt any **five** questions. Use of scientific calculator is permitted.*

1. (a) Draw the hydrologic cycle and explain at least three hydrologic processes. 7

   (b) Give a brief account of estimated world water quantities. 7

2. (a) Draw Symon's rain-gauge used in India. Explain the working of Tipping bucket type automatic rain-gauge. 7

   (b) Discuss the Thiessen polygon method of computation of average rainfall in a catchment. Give appropriate diagram and equation. *4+3=7*

3. (a) Differentiate between evaporation and transpiration. What are the factors affecting evaporation ? 7

(b) A tank with surface area of 25 ha. had the following parameters during a week :

Water temperature = 20°C

Relative humidity = 40%

Wind velocity at 1 m above G.L. = 16 km/hr. Estimate the average daily evaporation from the tank and volume of water evaporated during that one week. (Assume saturated vapour pressure at 20°C = 17·54 mm of Hg).   7

4. Define the following terms :   7×2=14

(a) Pan coefficient

(b) Consumptive use

(c) Infiltration

(d) Base flow

(e) Surface runoff

(f) Unit hydrograph

(g) Rainfall excess

5. (a) What are the Direct and Indirect methods for measurement of discharge in a river ? Explain any one of them.   7

(b) Explain the function of a stilling well for river stage measurement with the help of a neat sketch.   7

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6. (a) Explain the components of runoff hydrograph with the help of a sketch. 5

(b) What are the factors affecting the peak discharge of a basin ? 4

(c) Draw a schematic diagram showing catchment processes. 5

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

(b) Derive the formula used in the Muskingum channel routing. 8

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