

**B.Tech. Civil (Construction Management)**

**Term-End Examination**

**June, 2013**

**ET-535(A) : ELEMENTARY HYDROLOGY**

*Time : 3 hours*

*Maximum Marks : 70*

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*Note : All question carry equal marks. Q.1 is compulsory and answer any four from the remaining questions. Use of scientific calculator is permitted.*

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1. Define the following terms (*any seven*) : 7x2=14
- (a) Evaporations
  - (b) Evapotranspiration
  - (c) Infiltration capacity
  - (d) Hyetograph
  - (e) Hydrograph
  - (f) Rain gauge
  - (g) Baseflow
  - (h) surface Runoff.
2. (a) Draw neat and labeled sketch showing structure of the atmosphere. 6
- (b) Explain different methods of determining the average rainfall over a catchment. 8

3. (a) What are the factors affecting evaporation from a large water body ? Explain in brief. 6
- (b) A reservoir with a surface area of 250 ha had the average values of following parameters during one Ten-daily period in April 2011: Water temp. = 20°C, relative humidity = 40%, wind velocity at 1m above ground = 16km/hr,  $e_w = 17.54\text{mm}$ . Estimate the volume of water evaporated from the lake during that 10 days. 8
4. (a) Differentiate between potential evapotranspiration and actual crop evapotranspiration. 4
- (b) Define interception, depression, storage and infiltration. Describe the steps of measurement of infiltration using double ring infiltrometer in the field. 10
5. Discuss the factors affecting runoff. Draw a typical flow duration curve and discuss its characteristics and uses. 4+5+5=14
6. List the direct and indirect methods of discharge measurement. Describe the method of velocity-Area method using stilling-well installation with the help of a neat sketch. 4+10=14

7. (a) What is a unit hydrograph ? Describe the assumptions made in the theory of unit hydrograph. 5
- (b) Derive the formula used in Muskingum method for channel routing. 9
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