

GUJARAT TECHNOLOGICAL UNIVERSITY
BE- Vth SEMESTER-EXAMINATION – MAY/JUNE - 2012

Subject code: 150602**Date: 02/06/2012****Subject Name: Hydrology and Water Resources Engineering****Time: 02:30 pm – 05:00 pm****Total Marks: 70****Instructions:**

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

- Q.1** (a) Enumerate various types of rain gauges and explain weighing bucket type rain gauge in detail. **07**
 (b) Explain causes of sedimentation in reservoir and its control. **07**

- Q.2** (a) Define the following terms **07**
 (1) Precipitation (2) Infiltration (3) Interception (4) Runoff (5) Transpiration
 (b) Describe the methods of calculating average depth of rainfall from catchments. **07**

OR

- (b) Explain ϕ - index and W-index with the procedure to determine the same. **07**

- Q.3** (a) Explain in detail the factors affecting runoff. **07**
 (b) (1) Define the following **07**
 (a) Direct runoff hydrograph (b) Unit hydrograph (c) S-hydrograph
 (2) Clearly explain the procedure of separating base flow in a hydrograph.

OR

- Q.3** (a) Define the following **07**
 (1) Confined aquifer (2) Unconfined aquifer (3) Specific yield (4) Specific retention (5) Coefficient of transmissibility
 (b) The ordinates of 4 hour unit hydrograph are given in the table. Compute the ordinate of 8 hour unit hydrograph. **07**

Time in hour	0	4	8	12	16	20	24	28	32	36	40	44
Unit hydrograph in cumec	0	20	50	150	120	90	70	50	30	20	10	0

- Q.4** (a) Explain the procedure of fixing the capacity of reservoir using mass curve. **07**
 (b) Classify hydropower plants and show general arrangement of hydropower project. **07**

OR

- Q.4** (a) Write a detail note on flood management. **07**
 (b) Enumerate various methods of flood estimation. Describe flood frequency analysis. **07**

- Q.5** (a) Discuss various types of drought. Explain the causes of drought. **07**
 (b) Describe various measures for water conservation. **07**

OR

- Q.5** (a) Define water resources project. Explain environmental aspects in water resources planning. **07**
 (b) Explain flood routing through reservoirs and open channels. **07**
