

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 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**
