

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-V (OLD) EXAMINATION – WINTER 2018****Subject Code:150602****Date: 07/12/2018****Subject Name: Hydrology & Water Resources Engineering****Time: 10:30 AM TO 01:00 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) What is unit hydrograph? How it is constructed? Write assumptions and limitations of the unit hydrograph. **07**

(b) Enumerate various types of rain gauges and explain weighing bucket type rain gauge in detail. **07**

Q.2 (a) Explain the principal factors affecting the run-off in brief. **07**

(b) How would you estimate the design flood for a flood control project? Explain in briefly. **07**

OR

(b) What are the various causes of floods? **07**

Q.3 (a) Describe the methods of calculating average depth of rainfall from catchments. **07**

(b) Describe the various types of hydel plants. **07**

OR

Q.3 (a) Explain ϕ - index and W-index with the procedure to determine the same. **07**

(b) Explain with neat sketch storage zones of a reservoir. **07**

Q.4 (a) What are the different types of aquifers? Explain each in brief. **07**

(b) Discuss various types of drought. Explain the causes of drought. **07**

OR

Q.4 (a) Define flood routing and explain graphical method of flood routing. **07**

(b) Derive an expression for discharge from a well which is fully penetrated in confined aquifer. **07**

Q.5 (a) 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

(b) Define water resources project. Explain environmental aspects in water resources planning. **07**

OR

Q.5 (a) Discuss factors consider while selecting suitable site for a reservoir. **07**

(b) Water was pumped out from a well in a confined aquifer 10m thick, having a hydraulic conductivity of 1.5m/day. The drawdown observed in the two adjoining wells at 10m and 50m from the pumping well was 3.2m and 0.08m, respectively. Find the constant rate of pumping. **07**
