

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-VI EXAMINATION – SUMMER 2025****Subject Code: 3160610****Date:20-05-2025****Subject Name: Water Resources Engineering and Hydrology****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.
4. Simple and non-programmable scientific calculators are allowed.

MARKS

- Q.1**
- (a) Write brief note on any one dam located in Gujarat state. **03**
- (b) Define following terms: **04**
 Aquifer (2) Aquiclude (3) Aquifuge & (4) Aquitard
- (c) State Dalton's Law of evaporation. Explain various methods adopted to evaluate rate of evaporation. **07**

- Q.2**
- (a) Describe various forms of precipitation. **03**
- (b) Discuss various causes of flood. **04**
- (c) Explain method of determining direct runoff from a given storm hydrograph. **07**

OR

- (c) A storm with 12 cm precipitation produces a direct surface runoff of 7.2 cm. The time duration of the storm is given in below table. Determine ϕ – index of the storm. **07**

Time (Hour)	1	2	3	4	5	6	7	8
Hourly rainfall (cm)	0.4	1.0	1.8	2.6	2.0	1.5	1.2	0.5

- Q.3**
- (a) Write brief note on gravity dam with its salient features **03**
- (b) Describe various methods to find out missing rainfall data. **04**
- (c) Discuss recuperation test to estimate safe yield of an open well **07**

OR

- Q.3**
- (a) Discuss briefly isohyetal method to determine average depth of precipitation. **03**
- (b) Discuss briefly any four drainage basin characteristics. **04**
- (c) Discuss various types of energy dissipation devices used below spillway **07**

- Q.4**
- (a) Explain assumptions of unit hydrograph theory. **03**
- (b) Enumerate principles and objectives of water resources planning **04**
- (c) What is runoff? Discuss various factors affecting runoff from catchment area. **07**

OR

- Q.4**
- (a) Differentiate Hydrograph and Hyetograph. **03**
- (b) What is S-hydrograph? What are its uses? **04**
- (c) Explain the procedure of determine capacity of reservoir using mass curve method. **07**

- Q.5**
- (a) Write short note on run-off enhancement. **03**
- (b) Classify hydropower plant based on head of water and plant capacity. **04**
- (c) Explain various non-structural mitigation measures are adopted to control flood. **07**

OR

- Q.5**
- (a) Define and classify draught. **03**
- (b) Discuss channel improvement works as flood control measure. **04**
- (c) Enumerate various water resources projects effects on environment and ecological balance. **07**
