

Seat No.: \_\_\_\_\_

Enrolment No. \_\_\_\_\_

**GUJARAT TECHNOLOGICAL UNIVERSITY**  
**PDDC SEM-III Examination-Dec-2011**

**Subject code: X30601**

**Date: 13/12/2011**

**Subject Name: Hydrology & Water Resources Engineering**

**Time: 2.30 pm -5.00 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) Define and explain hydrological cycle with neat sketch **07**  
(b) Explain “Arithmetic mean method” to calculate average rainfall of a catchment area **07**
- Q.2** (a) How the rainfall is measured? Explain non- recording type of rain gauge with neat sketch. **07**  
(b) Explain the Gumbel’s method. **07**
- (b) A flood of a certain magnitude has a return period of 50 years **07**  
1) What is its probability of exceedance?  
2) What is the probability that this flood may occur at least once in the next 25 years?
- Q.3** (a) Explain the method of determining direct run-off from a given storm hydrograph. **07**  
(b) What are the factors that affect run-off from a basin area **07**
- Q.3** (a) Discuss the applications of the unit hydrograph in detail. **07**  
(b) What is S-hydrograph? Explain the method of construction of it. **07**
- Q.4** (a) Define and explain: **07**  
1) Such age storage 2) Bank storage 3) Valley storage  
(b) Discuss the methods to control the floods. **07**
- Q.4** (a) Discuss the types of aquifers with neat sketches. **07**  
(b) How the capacity of a reservoir is determined? **07**
- Q.5** (a) Write short note on “Thiessen Polygon method”. **07**  
(b) Define and explain Ø-Index and W-index. **07**
- Q.5** (a) Discuss the “California method “of flood frequency analysis. **07**  
(b) Write short note on rainwater harvesting. **07**

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