

**GUJARAT TECHNOLOGICAL UNIVERSITY****ME - SEMESTER– I (New course)• REMEDIAL EXAMINATION – SUMMER 2015****Subject Code: 2713302****Date:13/05/2015****Subject Name: Hydrology and Watershed Management****Time: 10:30 am to 1:00 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) Explain hydrologic equation. What are the basic hydrological data required for a river basin development. **07**  
 (b) What are the factors which affect infiltration? Explain any one method of determining the infiltration capacity of soil. **07**

- Q.2** (a) Differentiate Instantaneous Unit hydrograph and Synthetic Unit Hydrograph. Discuss the limitation of Unit Hydrograph method. **07**  
 (b) Explain briefly the method of stream gauging by velocity area method. **07**

**OR**

- (b) Define depth area duration (DAD) curve. Explain Step by step procedure for drawing DAD curves. **07**

- Q.3** (a) Explain stream flow routing (channel routing) in detailed. **07**  
 (b) Define random variable. Discussed in brief synthetic flow generation model. **07**

**OR**

- Q.3** (a) Explain the different types of drainage network for effective watersheds management. **07**  
 (b) What are the different forms of precipitation? Explain the analysis of rainfall data with respect to time and frequency. **07**

- Q.4** (a) Determine the standard deviation and flood magnitude at recurrence interval of 100 yrs of the annual flood series using Gumbel's method for the 10 yrs flood data as given below **07**

Year	2010	2009	2008	2007	2006	2005	2004	2003	2002	2001
Flood in 1000 cumec	44	38	20	24	22	37	4	29	10	19

- (b) Enlist step by step procedure to develop a simulation model. **07**

**OR**

- Q.4** (a) Discuss in brief the characteristics of a watershed. **07**  
 (b) Explain Annual series and Partial duration series with reference to flood frequency analysis.

- Q.5** (a) Explain the significance of conceptual model and model verification in developing a hydrologic model. **07**  
 (b) Explain how soil conservation helps in managing watershed. **07**

**OR**

- Q.5** (a) Explain stochastic model and deterministic model with example. **07**  
 (b) Explain the different methods for reducing flood peaks. **07**

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