Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–V • EXAMINATION – WINTER 2013

Subject Code: 150602 **Date: 29-11-2013**

Subject Name: Hydrology and Water Resources Engineering

Time: 10.30 am - 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 are the different types of reservoir? Explain each in brief. **07**

(b) What is reservoir planning? Describe briefly various investigations required for reservoir planning. **07**

Q.2 **(a)** What is mass curve? Explain how mass curve is prepared. **07**

(b) Discuss various methods of reservoir sediment control in brief. **07**

OR

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

Q.3 **(a)** Derive an expression for discharge from a well which is fully penetrated in confined aquifer. **07**

(b) Explain interference between two wells. **07**

OR

Q.3 **(a)** Design a tube well for the following data : **07**

(i) Yield required = 0.20 cumecs

(ii) Thickness of confined aquifer = 40 m.

(iii) Radius of circle of influence = 300 m.

(iv)Permeability coefficient = 80 m/day

(v) Drawdown = 6 m.

(b) Explain briefly the components of hydroelectric scheme. **07**

Q.4 **(a)** Describe the various types of hydel plants. **07**

(b) Explain the principal factors affecting the run-off in brief. **07**

OR

Q.4 **(a)** Distinguish between flood hydrograph and unit hydrograph. Write assumptions and limitations of the unit hydrograph. **07**

(b) The hourly ordinates of a two hour unit hydrograph are given below. Derive a six hour unit hydrograph for the same catchment. **07**

Time in hr	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15
Discharge in cumecs	0.0	1.2	2.9	5.2	8.2	10.0	9.2	7.7	6.5	5.2	4.2	3.1	2.3	1.5	0.7	0.0

Q.5 **(a)** Write short note on evapotranspiration and its measurements. **07**

(b) Explain flood management in brief. **07**

OR

Q.5 **(a)** Define flood routing and explain graphical method of flood routing. **07**

(b) Describe flood frequency analysis in brief. **07**

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