Seat No.: _____ Enrolment No.

GUJARAT TECHNOLOGICAL UNIVERSITY

BE- SEMESTER–V (NEW) EXAMINATION – WINTER 2020

Subject Code:3151311 **Date:22/01/2021**

Subject Name:Groundwater Hydrology and Contamination

Time:10:30 AM TO 12:30 PM **Total Marks:56**

Instructions:

1. **Attempt any FOUR questions out of EIGHT questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**

			MARKS
Q.1	**(a)**	Define Groundwater hydrology.	**03**
	(b)	Differentiate between Confined and Unconfined aquifer.	**04**
	(c)	Explain Darcy's law. What are its limitations?	**07**
Q.2	**(a)**	What do you mean by Groundwater contamination?	**03**
	(b)	Explain vertical distribution of Groundwater with sketch.	**04**
	(c)	Describe with neat sketch Groundwater in hydrological cycle.	**07**
Q.3	**(a)**	What do you mean by Leaky aquifer?	**03**
	(b)	Differentiate between Porosity and Void ratio with its expression.	**04**
	(c)	Enlist the site selection criteria for Artificial recharge. Explain any one artificial recharge method for Groundwater.	**07**
Q.4	**(a)**	What is Cone of depression?	**03**
	(b)	The Void ratio of an unconsolidated clay sample is 1.81. Determine the Porosity of the sample.	**04**
	(c)	In an area of 150 ha, the water table dropped by 5.8m. If the Porosity is 20% and the Specific retention is 30% determine (i) the Specific yield of the aquifer, (ii) change in Ground water storage.	**07**
Q.5	**(a)**	What do you mean by Artesian well?	**03**
	(b)	Enlist Groundwater pollution remediation methods and explain any one in detail.	**04**
	(c)	Derive the expression for steady radial groundwater flow in Unconfined aquifer.	**07**
Q.6	**(a)**	What do you mean by Ground water table?	**03**
	(b)	Differentiate between Groundwater and Surface water.	**04**
	(c)	Enlist sources of Groundwater pollution with its causes.	**07**
Q.7	**(a)**	Define Hydraulic conductivity.	**03**
	(b)	Write down Indian standards for Groundwater quality.	**04**
	(c)	Explain Pumping test to estimate safe yield from an open well.	**07**
Q.8	**(a)**	What do you mean by Perched aquifer?	**03**
	(b)	Differentiate between Aquitard, Aquifuge and Aquiclude.	**04**
	(c)	Derive the expression for steady radial groundwater flow in Confined aquifer.	**07**

****