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Reg. No.					

Question Paper Code

11864

B.E. / B.Tech. - DEGREE EXAMINATIONS, APRIL / MAY 2023

Fifth Semester

Civil Engineering

20CEEL510 - GROUND WATER ENGINEERING

(Regulations 2020)

Duration: 3 Hours

Max. Marks: 100

$PART - A (10 \times 2 = 20 Marks)$

Answer ALL Questions

1.	Def	ine storage coefficient.	Marks, K-Level, CO 2,K1,CO1			
2.	State the assumption of Dupuit Forchheimer.					
3.	Highlight the principle and objective of slug test in wells.					
4.						
5.	What is the need for groundwater management model?					
6.	Write down the ground water balance equation.					
7.		ntion the need for water quality standards and what are the industrial lity water requirements.	2,K1,CO4			
8.	시간 (1) 후 사용과 후 경영하다 (2) 이후 (1.4 1) 시간					
9.	What is Soil Aquifer treatment?					
10.	Wh	What are the contamination sources that pollute groundwater?				
		PART - B (5 × 13 = 65 Marks) Answer ALL Questions				
11.	a)	Write about the Estimation of Ground water potential based on GEC Methodology.	13,K2,CO1			
		OR				
	b)	Briefly elaborate on the formation constants which characterize an aquifer.	13,K2,CO1			
12.	a)	Derive the partial differential equation for unsteady groundwater flow with assumptions.	13,K2,CO2			
	1.)	OR	13,K2,CO2			
	b)	Elaborate with neat sketches about the collector wells and infiltration gallery.	13,K2,CO2			
13.	a)	Explain four modeling approaches in hard rock aquifer system. OR	13,K2,CO3			
K1 -	Reme	omber: K2 – Understand: K3 – Apply: K4 – Analyze: K5 – Evaluate: K6 – Create	11864			

K1 – Remember; K2 – Understand; K3 – Apply; K4 – Analyze; K5 – Evaluate; K6 – Create

- b) Explain with any case study the ground water management system in ^{13,K2,CO3} India.
- 14. a) Describe the physical, chemical and biological water quality standards 13,K2,CO4 for various purposes.

OR

- b) Discuss about the groundwater legislation and its inadequateness. 13,K2,CO4
- 15. a) List out the various methods of artificial recharge and explain any four 13,K2,CO5 methods in detail with neat sketches.

OR

b) Explain the sources, effects and control of sea water intrusion in 13,K2,CO5 groundwater.

PART - C $(1 \times 15 = 15 \text{ Marks})$

- 16. a) Explain in detail about protection zone delineation. 15,K2,CO6
 - b) (i) Discuss in detail the groundwater remediation from contamination 8,K2,C06 and scaling of abandoned wells.
 - (ii) Explain the methods and benefits of conjunctive use of 7,K2,CO6 groundwater.