Hall Ticket Number:

Code No. : 42022A

VASAVI COLLEGE OF ENGINEERING *(Autonomous)*, HYDERABAD
B.E. (Civil Engg.) IV Year II-Semester Main Examinations, May-2019

Groundwater Hydrology

Time: **3** hours   Max. Marks: **70**

Note: Answer ALL questions in Part-A and any FIVE from Part-B

Q.No.	Stem of the question	M	L	CO	PO
	Part-A (10 × 2 = 20 Marks)				
1.	Write the distribution of sub surface water with the help of a neat sketch.	2	1	1	1
2.	Define storage coefficient.	2	1	1	1
3.	What is meant by well development?	2	1	2	1
4.	Write a note on partially penetrating wells.	2	1	2	1
5.	Write two methods of sub-surface investigation of ground water.	2	1	3	1
6.	Write about resistivity method.	2	1	3	1
7.	What are the methods for prevention of seawater intrusion in coastal aquifers?	2	1	4	1
8.	Discuss about the factors affecting the shape of the salt water- fresh water interface and length of intrusion.	2	2	4	2
9.	Ground water basin management requires basin data collection and water budgeting. Discuss.	2	3	5	2
10.	Differentiate between a true model and analog models.	2	1	5	1
	Part-B (5 × 10 = 50 Marks)				
11. a)	A tube well penetrates 30 cm diameter fully a confined aquifer. The length of the strainer is 25m. Calculate the yield from the well under a drawdown of 4m. The coefficient of permeability of aquifer is 50m/day and radius of circle of influence of 200m.	5	3	1	2
b)	Derive the equation for a steady radial flow in an unconfined aquifer.	5	3	1	2
12. a)	Explain Jacob method of solution for finding S & T.	5	3	2	2
b)	With the aid of neat sketch, explain the concept of multiple well system.	5	3	2	1
13. a)	What are the major differences between the Wenner and Schlumberger electrode configuration in the resistivity method for subsurface exploration.	5	3	3	1
b)	What is the necessity of geophysical methods in groundwater exploration?	5	2	3	1
14. a)	Explain the various methods adopted for artificial recharge of ground water.	5	2	4	2
b)	Derive Ghyben-Herzberg relation with the aid of neat sketch and discuss about the shape of the salt water wedge.	5	3	4	2
15. a)	Explain the principle and working of sand model and viscous fluid model in groundwater systems with the aid of neat sketches.	5	3	5	2
b)	Enumerate the advantages of consumptive use of surface and groundwater.	5	3	5	1

	M	L	CO	PO
16. a) Obtain the differential equation of the form $\nabla^2 h = \dfrac{S}{T}\dfrac{\partial h}{\partial t}$ governing unsteady groundwater flow in a homogeneous, isotropic confined aquifer using various compressibility parameters.	6	2	1	2
b) Write a note on well completion.	4	2	2	1
17. Answer any *two* of the following:				
a) Discuss in detail the various factors to be considered while selecting the site for a well.	5	2	3	1
b) Explain with the aid of neat sketch, the induced recharge method of artificial recharge.	5	3	4	2
c) Explain the process involved in hydrologic balance equation.	5	2	5	2

M: Marks; L: Bloom's Taxonomy Level; CO: Course Outcome; PO: Programme Outcome

S. No.	Criteria for questions	Percentage
1	Fundamental knowledge (Level-1 & 2)	50
2	Knowledge on application and analysis (Level-3 & 4)	50
3	*Critical thinking and ability to design (Level-5 & 6) (*wherever applicable)	

രുരുരുൽ൮൮