Code No: 126DW

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B. Tech III Year II Semester Examinations, April - 2018
GROUND WATER HYDROLOGY
(Civil Engineering)

Time: 3 hours

Max. Marks: 75

Note: This question paper contains two parts A and B.

Part A is compulsory which carries 25 marks. Answer all questions in Part A. Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b, c as sub questions.

PART - A

(25 Marks)

1.a)	Define the specific yield.	[2]
b)	What is porosity of the geological soils?	[3]
c)	Explain the main assumption of the Theism equation.	[2]
d)	What is the jacobs modification of Theism equation?	[3]
e)	Describe the electrical logging.	[2]
f)	Write about the application of the seismic refraction method.	[3]
g)	Draw neat sketch of recharge well.	[2]
h)	What are the various favorable conditions for the artificial recharge?	[3]
i)	What is up coning?	[2]
j)	What is dispersion?	[3]

PART - B

(50 Marks)

2.a) Explain with neat sketch of Ground water hydrologic cycle.

b) Describe water baring properties of various rocks. [5+5]

OR

3.a) Derive the expression for the three dimensional differential equations for the ground water flow.

b) Discuss the hydrological vertical distribution of ground water flow. [5+5]

4.a) What are the various steps involved in obtain the expression the steady radial flow in the confined aquifers

b) Explain the Jacobs chows method of simplification. [5+5]

OR

5. A 30cm well fully penetrate e a confined aquifer 30m deep. After a long period of pumping at a rate of 1200 l.p.m, the draw downs in the wells at 20 and 45m from the pumping well are found to be 2.2m and 1.8m respectively. Determine the transmissibility of the aquifer. What is the draw down in the pumped well? [10]

6.a) How do conduct the electrical resistivity using the wenner electric method? Explain with neat sketch.

b) What is the various subsurface method of ground water exploration? Describe each with small note. [5+5]

OR

7.a) Explain the procedure for the Aerial Photogrammetric applications in ground water sub surface investigations.

b) Write about the resistivity logging. [5+5]

8.a) Write short note on the i) Ditch and hood type of the recharge ii) Recharge inducing wells.

b) Explain the importance and advantages of the artificial ground water recharge. [5+5]

OR

9. Explain different types of the rain water recharge methods with neat sketch. [10]

10.a) Describe the Ghyhen Herberg relation of sea water intrusion.

b) How to control the sea water intrusion in coastal aquifers? [5+5]

OR

11. By conductivity measurements of a well in coastal aquifer extending 4km along the shore, the interface was located at a depth of 20m bellow m.s.l at 100m from the shore, inland. The depth of the homogenous aquifer is 30m bellow m.s.l and has permeability of 50m/day. What is the rate of water enter in to the sea? [10]

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