

B.M.S. College of Engineering, Bengaluru-560019

Autonomous Institute Affiliated to VTU

August 2024 Supplementary Examinations

Programme: B.E.

Branch: CIVIL ENGINEERING

Course Code: 21CV7PEGWH

Course: Ground Water Hydrology

Semester: VII

Duration: 3 hrs.

Max Marks: 100

Instructions: 1. Answer any FIVE full questions, choosing one full question from each unit.
 2. Missing data if any, may be suitably assumed.

UNIT - I

1 a) Explain the terms 10
 i) aquifer ii) water table iii) specific yield iv) coefficient of permeability and v) effluent streams

b) Discuss Tracer test and its limitations in detail. 10

OR

2 a) Derive the expression for general unsteady three dimensional ground water flow equation through porous media. 10

b) Two parallel rivers A and B are separated by a land mass as shown in Fig. 1. Estimate the seepage discharge from River A to River B per unit length of the rivers. 10

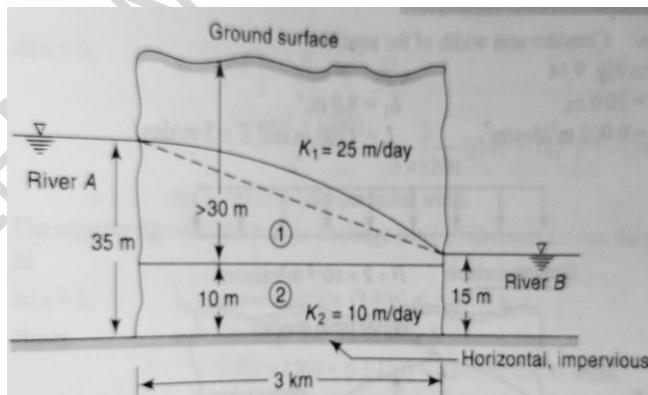


Fig.1

UNIT - II

3 a) With neat sketch derive discharge equation for steady radial flow into an unconfined aquifer. 10

b) A well is located in a 25 m confined aquifer of permeability 30 m/day and storage coefficient 0.005. If the well being pumped at the rate of 1750 lpm, calculate the drawdown at a distance of (i) 100 m and (ii) 50 m from the well after 20 h of pumping. 10

OR

4 a) Explain the recuperation test for estimating the yield from an open well. **10**

b) A 30 cm well completely penetrates an unconfined aquifer of saturated depth 40 m. After a long period of pumping at a steady rate of 1500 lpm, the drawdown in two observation wells 25 m and 75 m from the pumping well were found to be 3.5 m and 2.0 m, respectively.

(i) Determine the transmissibility of the aquifer.

(ii) Also, determine the drawdown at the pumping well.

UNIT - III

5 a) Define artificial groundwater recharge. Explain the conditions favorable for the artificial recharge. Also, explain any one method of artificial groundwater recharge. **10**

b) Explain the major sources of groundwater pollution. **10**

UNIT - IV

6 a) List the various methods to control the saline water intrusion into the aquifer. Explain any two methods in details. **10**

b) By conductivity measurements in a well in a coastal aquifer extending 4 km along the shore, the interface was located at a depth of 20 m below the msl and 100 m from the shore, inland. The depth of the homogeneous aquifer is 30 m below msl, and has a permeability of 50 m/day. Calculate the rate of fresh water flow into the sea and the width of gap at the shore bottom through which it escapes into sea. **10**

UNIT - V

7 a) With a neat sketch explain seismic refraction method of groundwater investigation. **10**

b) With a neat sketch explain the electric logging technique for geophysical investigation in a bore hole. **10**
