

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
i) aquifer ii) water table iii) specific yield iv) coefficient of permeability and v) effluent streams 10
 - 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

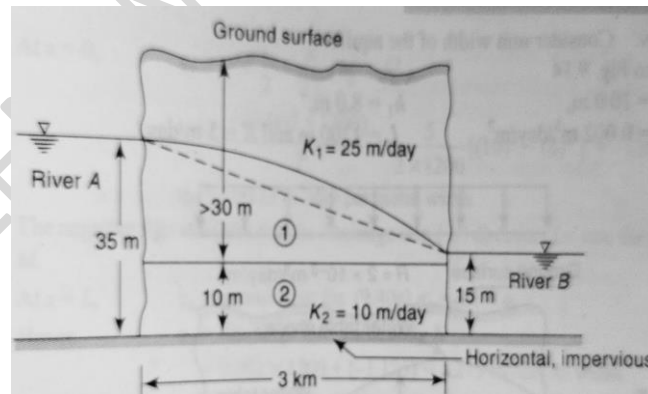


Fig.1

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. **10**
- (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**
