

Code No: **R42013****R10****Set No. 1**

IV B.Tech II Semester Supplementary Examinations, April - 2018
GROUND WATER DEVELOPMENT AND MANAGEMENT
(Civil Engineering)

Time: 3 hours**Max. Marks: 75**

Answer any FIVE Questions
All Questions carry equal marks

- 1 a) Enlist the factors governing the formation properties of groundwater porosity. Explain them in detail. [5]
b) What are the various effects of pumping? Discuss in brief. [5]
c) Derive the equation to estimate the discharge from a steady state unconfined aquifer. [5]
- 2 a) Define the term leaky aquifer and derive the equation for anisotropic non-homogeneous leaky confined aquifer for unsteady condition. [8]
b) The following drawdown data were obtained from a pumping test performed on a confined aquifer. Determine the transmissivity and storage coefficient using Jacob's equation above; if the pumping rate was constant at 400 liter/sec and the drawdown data were obtained from an observation well located 800 m from the abstraction well.
- | | | | | | | | | | | | |
|-----------------------------|------|------|------|------|------|------|------|------|------|------|------|
| Time (minute) | 0 | 15 | 25 | 35 | 55 | 75 | 135 | 210 | 350 | 450 | 600 |
| Water level (m above datum) | 28.7 | 17.5 | 18.9 | 17.9 | 18.2 | 18.0 | 17.3 | 16.5 | 16.9 | 16.4 | 15.8 |
- [7]
- 3 a) Discuss in detail by means of a neat sketch, the principle involved in the exploration of geophysics by Resistivity Logging. [8]
b) What are Aerial Photogrammetry? How does it work for the geophysical exploration? Explain. [7]
- 4 a) State the significance of well hydraulics in groundwater? [3]
b) What are collector wells? Explain the purpose, operation and maintenance of the same. [6]
c) Discuss the details involved in the well design of the following parameters: slot size, screen diameter and screen selection [6]
- 5 a) What do you understand by mechanical surging? Explain the factors responsible of mechanical surging. [7]
b) Describe the comparison between various drilling methods based on the application, limitation, principle, cost and operation & maintenance. [8]
- 6 Write a detailed note on
a) Recharge mounds
b) Flooding method [15]
c) Stream channel

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- 7 a) Derive the Ghyben-Herzberg relation to determine the depth of interface between the fresh and salt water. [7]
b) Enumerate the causes and effects of sea water intrusion. [8]
- 8 a) Explain how basin management contributes towards groundwater management. [7]
b) Stating the assumptions, derive the hydrologic equilibrium equation. [8]

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