

Code: R7420102

**R7****B.Tech IV Year II Semester (R07) Supplementary Examinations March/April 2013****GROUND WATER DEVELOPMENT AND MANAGEMENT****(Civil Engineering)**

Time: 3 hours

Max Marks: 80

Answer any FIVE questions  
All questions carry equal marks

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- 1 (a) Define the terms porosity, specific yield and specific retention.  
(b) What is an aquifer? What are the various types of aquifers?
- 2 A 30 - cm well penetrating a confined aquifer is pumped at a rate of 1200 lpm.  
The drawdown at an observation well at a radial distance of 30 m is as follows:

Time from start (min)	1.0	2.5	5	10	20	50	100	200	500	1000
Drawdown (m)	0.2	0.5	0.8	1.2	1.8	2.5	3.0	3.7	4.4	5.0

Calculate the aquifer parameters S and T.

- 3 (a) List out the assumptions involved in analyzing unsteady radial flow in a confined aquifer.  
(b) A 20 cm well penetrates 30 m below GWT. After a long period of pumping at a rate of 1800 lpm the drawdown in the observation wells at 12 m and 36 m from the pumped well are 1.2 m and 0.5 m respectively, find the transmissibility of the aquifer and the drawdown in the pumped well assuming  $R = 300$  m.
- 4 (a) Explain Cooper - Jacob method.  
(b) Write short notes on leaky aquifers.
- 5 Explain any two surface methods of exploration.
- 6 What is the necessity of artificial recharge? Give the applications of GIS and remote sensing in artificial recharge of ground water.
- 7 What is Ghyben - Herzberg relation?
- 8 Give the concept of conjunction use. Explain the same with a case study.

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