

Roll No. ....

**2634**

**B. Tech. (8th Semester) (Civil Engg.)**

**Electives Examination – May, 2012**

**GROUND WATER ENGINEERING**

**Paper : CE-426-E**

***Time : Three Hours ]***

***[ Maximum Marks : 100***

*Before answering the questions, candidates should ensure that they have been supplied the correct and complete question paper. No complaint in this regard, will be entertained after examination.*

**Note :** Attempt any *five* questions. All questions carry equal marks.

1. (a) What are assumptions for simplification of ground water equation for analytical solution ?  
Briefly describe tile drainage, weeping tiles and running drains. 10
- (b) Enlist different methods for ground water explorations. What is geophysical method of ground water investigation ? 10

2. (a) Define following hydrological parameters :

2 × 4 = 8

(i) Porosity

(ii) Permeability

(iii) Transmissibility and

(iv) Conductivity

(b) Describe the basic principle of electrical method of ground water presence. What is ARCHIE law for estimation of resistivity of non-porous clayey soil ? 12

3. (a) State Thiem's Equilibrium formula, giving its limitations and adjustments. 10

(b) Describe interference among wells. 10

4. (a) State various aspects and hydrological parameters considered while designing a deep tube well. 10

(b) Describe code of practice for construction of tube well. 10

5. (a) Explain briefly wash bore technology. 10

(b) Describe construction techniques of a shallow well. 10

6. Explain in detail hydraulic method of tube well drilling and its testing. What is a Bore Log ? 20

7. How will you identify the areas for recharge of ground water, also describe various sources of water for recharge of ground water. 20

8. Write short notes on any *four* of the following :

$$5 \times 4 = 20$$

(i) Hydraulic testing of pumps

(ii) Re-charge pits

(iii) Spherical flow in well

(iv) Tile drain

(v) Alignment of tube well