

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