(b) Write short notes on : 10

(i) Development of the well

(ii) Corrosion & failure of tubewell

7. (a) Enumerate the different methods which are used for drilling tubewells ? Discuss any one in detail. 10

(b) With the help of neat sketch explain setting well screen by pull-back method & open hole method. 10

SECTION – D

8. (a) Write short note on necessity of ground water recharge. 10

(b) Explain Ditch & Flooding method of ground recharge. Also make neat sketch. 10

9. Write short notes on :

(a) Recharge induced by well 10

(b) Basin type recharge method 10

Roll No. .....

24516

B. Tech. 7th Semester (Civil Engg.) Examination – June, 2016

GROUND WATER ENGG.

Paper : CE-453-F

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 : There are 9 questions in all. Question No. 1 is ***compulsory*** & students have to attempt ***one*** question from each of the ***four*** Sections.

1. (a) Define transmissibility. $2 \times 10 = 20$

(b) What is drawback of equilibrium formula given by Thiem ?

(c) What are different types of aquifier ?

(d) Mention the reasons for failure of tubewell.

(e) List various methods of ground water recharging.

(f) How aquifier constants S & T are determined ?

(g) What is principle objective of ground water studies ?

(h) List the assumptions in the Theis equation.

(i) What is unsteady flow condition ?

(j) Mention different types of tubewells.

SECTION – A

2. (a) What are various aquifier properties ? Explain in detail. 10

(b) Explain various methods of ground water exploration & investigation. 10

3. (a) A 30 cm well penetrates 50m below the static water table. After a long period of pumping at a rate of 1800 lpm, the drawdown in the wells at 15 & 45 m from the pumped well were 1.7 & 0.8 m resp. Determine the transmissivity of the aquifier. What is drawdown in the pumped well? 10

(b) Derive the ground water flow for steady flow in isotropic homogenous aquifier. 10

SECTION – B

4. (a) Explain the effect of various non-dimensional parameters $\left(\alpha, \frac{R}{rw}, \frac{b}{rw}, \frac{\ell}{rw}, \frac{b}{R}\right)$ on the discharge & drawdown for partial penetration of the well. 10

(b) What do you mean by spherical flow ? Why this type of flow is not used in practical ? 10

5. (a) With the help of neat sketch explain partial penetration of an aquifier by a well. 10

(b) From the pumping tests of a semiconfined aquifier of thickness 30 m & permeability 20 m/d, it is estimated that the recharge rate from an overlying unconfined aquifien through an aquitard of thickness 2m, is 50 mm/year. The average piezometric surface in semiconfined aquifier is 16 m below WT in the unconfined aquifier. Determine the hydraulic characteristics of the aquifier & aquitard (Semi-confining layer). 10

SECTION – C

6. (a) How do you ensure that 'tubewell construction' has been satisfactory ? Describe any test you would conduct for this purpose. 10