Roll No. .....

24516

B. Tech. 7th Sem. (Civil Engineering)

Examination – May, 2015

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 : Question No. 1 is ***compulsory***. Attempt one question from each Section. All questions carry equal marks. Assume missing data, if any, suitably.

1. (a) What are the assumptions in Theiem' s equation ?

(b) Differentiate between confined and unconfined aquifer.

(c) Describe the methods of drill operations.

(d) Briefly describe radius of influence in well.

(e) Define optimum capacity of well. 5 × 4 = 20

SECTION – A

2. Define the following terms : 20

(i) porosity

(ii) specific yield

(iii) compressibility

(iv) hydraulic diffusivity

3. (a) Explain ground water exploration. Describe various methods of investigations. 15

(b) Describe Dupit's assumptions. 5

SECTION – B

4. (a) Derive Thiem's equilibrium formula for confined aquifer. 10

(b) What do you understand by interference of wells ? 10

5. (a) Describe non equilibrium formula for aquifer of unsteady radial flows. 10

(b) Define spherical flow in a well and partial penetration of an aquifer. 10

SECTION – C

6. (a) Define tube well. What are the different types of tube wells ? Explain different components of a tube well with neat diagram. 15

(b) Briefly describe gravel packing, well sickness and development of well. 5

7. (a) Describe construction and working of tube wells. 10

(b) Describe verticality and alignment of tube well. 5

(c) What are different types of strainers ? Explain in detail. What is its use ? 5

SECTION – D

8. (a) Define artificial recharge of ground water and its importance. Describe different recharge techniques in detail. 10

(b) Explain in detail the induced infiltration method of artificial ground water recharge. 10

9. (a) Briefly describe recharge pits, shafts and recharge wells. 10

(b) What are the various methods of water spreading in artificial recharge ? 10
