| (b) | Write short notes on: | |
|------------|---|---|
| ED. | (i) Development of the well | |
| e e | (ii) Corrosion & failure of tubewell | |
| 7. (a) | Enumerate the different methods which are | |
| 20 | used for drilling tubewells? Discuss any one in | |
| | detail. 10 | |
| (b) | With the help of neat sketch explain setting | |
| 8. | well screen by pull-back method & open hole | |
| | method. | |
| | SECTION - D | 3 |
| 8. (a) | Write short note on necessity of ground water | |
| 100 | recharge. 10 | |
| (b) | Explain Ditch & Flooding method of ground | |
| 320 | recharge. Also make neat sketch. | |
| 9. W | rite short notes on: | |
| (a) | Recharge induced by well 10 | |
| (b) | Basin type recharge method 10 | |
| | | |
| | e e e e e e e e e e e e e e e e e e e | |
| 24516-2 | 2550-(P-4)(Q-9)(16) (4) | |

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.

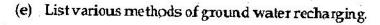
Note: There are 9 questions in all. Question No. 1 is compulsory & students have to attempt one question from each of the four Sections.

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.

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P. T. O.



- (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

- (a) What are various aquifier properties? Explain in detail.
 - (b) Explain various methods of ground water exploration & investigation.
- 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?
 - (b) Derive the ground water flow for steady flow in isotropic homogenous aquifier. 10

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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 thistype 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.
 - (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

24516-2550-(P-4) (Q-9) (16)

P.T.O.