

M. Tech.-III (Civil-Hydraulic Engineering) (CBCS – 2015 Course) :
WINTER - 2018

SUBJECT: SELF- STUDY PAPER- I GROUND WATER HYDROLOGY

Day: Saturday
Date: 08/12/2018

W-2018-3167

Time: 11.00 AM TO 02.00 PM
Max. Marks: 60

N.B:

- 1) All questions are **COMPULSORY**.
- 2) Figures to the right indicate **FULL** marks.
- 3) Answers to both the sections should be written in **SEPARATE** answer book.
- 4) Assume suitable data, if necessary.

SECTION-I

- Q.1** a) List out components of hydrological cycle and explain its role in groundwater. (05)
b) What are different types of aquifer? Explain properties of aquifer. (05)

OR

- a) What is importance of groundwater in water resources assessment? (05)
b) State the advantages and disadvantages of groundwater over surface water. (05)

- Q.2** What are assumptions for constructing flow net? Describe the procedure for constructing flow net. (10)

OR

- a) Define following terms: (05)
i) Transmissibility iii) Permeability
ii) Hydraulic gradient iv) Coefficient of permeability
b) What are the assumptions made for Darcy's law? (05)

- Q.3** Explain Dupit's theory for steady or equilibrium radial flow and what are assumptions and limitations for confined aquifer in Dupit's theory? (10)

OR

- a) Explain the terms anisotropy and unsaturated flow in details. (05)
b) A 20cm well penetrates 30m below static water level (GWT) after a long period of pumping at a rate of 2000 lpm the drawdown in the observation wells at 12m and 36m from the pumped well are 1.2m and 0.5m respectively determine transmissibility of aquifer. (05)

SECTION-II

- Q.4** a) Describe groundwater balance equation and explain its terms. (05)
b) Enlist different types of yield and explain any one in detail. (05)

OR

Enlist the methods of estimation of groundwater yield and explain any one method. (10)

- Q.5** Enlist the types of model and explain any three in details. (10)

OR

What is a groundwater modelling? Explain necessity of groundwater modelling in detail. (10)

- Q.6** Enlist types of ground water exploration and explain any three in details. (10)

OR

- a) Describe in detail present status of groundwater quality in India. (05)
b) Explain GIS and its application in ground water exploration. (05)

* * * * *