USN | | | | | | | | | | |

10CV665

Sixth Semester B.E. Degree Examination, June/July 2015
Ground Water Hydrology

Time: 3 hrs. Max. Marks:100

Note: ***Answer any FIVE full questions, selecting atleast TWO questions from each part.***

PART – A

1 a. Define the terms :
   i) Juvenile water
   ii) Vadose water
   iii) Connate water
   iv) Metoric water. **(08 Marks)**

b. Explain confined and unconfined aquifers. **(06 Marks)**

c. Explain the vertical distribution of sub surface water. **(06 Marks)**

2 a. Define porosity and specific yield, state the relationship between them. **(04 Marks)**

b. Explain storage coefficient with a neat diagram, and derive an expression for storage co-efficient. **(06 Marks)**

c. An artesian aquifer 20 m thickness has a porosity of 20% and bulk modulus of compression 10^8 N/m^2. Estimate storage coefficient of the aquifer. What fraction of this is attributable to the expansibility of water? **(10 Marks)**

3 a. Explain the following :
   i) Darcy's law
   ii) Transmissibility coefficient
   iii) Permeability
   iv) Safe yield. **(12 Marks)**

b. Explain the land subsidence due to ground water with drawls. **(05 Marks)**

c. Explain the term Intrinsic permeability. **(03 Marks)**

4 a. Derive an expression for discharge from a well of steady radial flow in an unconfined aquifer. **(12 Marks)**

b. A well of 0.5m diameter penetrates fully into a confined aquifer of thickness 20m and hydraulic conductivity 8.2×10^{-4} m/s. What is the maximum yield expected from this well if the drawdown in the well is not to exceed 3m. The radius of influence may be taken as 260m. **(08 Marks)**

PART – B

5 a. Calculate the discharge of tube well for the following data :

Diameter of the well	= 15 cm
Draw down	= 4 m
Length of tube well strainer below draw down	= 10 m
Coefficient of permeability of aquifer	= 0.05 cm/sec
Radius of circle of inflow	= 200 m.

(10 Marks)

b. Explain Jacob method of pumping test to determine aquifer constant S and T. **(10 Marks)**

6 a. Explain the method of construction of dug well with neat sketches. **(10 Marks)**
b. Explain how the yield of an open well can be determined. **(10 Marks)**

7 a. Explain the Wenner and Schlumberger method of ground water exploration. **(10 Marks)**
b. A horizontal bed of SSt lies beneath the shale over burden in a seismic refraction conducted over horizontal surface of the shade. The direct wave at refracted wave lie simultaneously it can be detected 3600′ away from shot point. If the velocity of wave in SSt bed is of 20,000′/sec and the travel time is 0.40 sec. Find the thickness of the overburden. **(10 Marks)**

8 a. Explain different methods of ground water recharging. **(08 Marks)**
b. Write short notes on :
i) Sonic logging
ii) Ground water runoff
iii) Types of strainers. **(12 Marks)**

* * * * *