Registration No: | | | | | | | | | | |

Total Number of Pages: 02 **B.Tech.**
PECI5402

7th Semester Regular/Back Examination 2017-18
Ground Water Hydrology
BRANCH: CIVIL
Time: 3 Hours
Max Marks: 70
Q.CODE: B339

Answer Q1 which is compulsory and any four from the rest. .
The figures in the right hand margin indicate marks.

Q1 **Answer the following questions: *multiple type or dash fill up type*** **(2 x 10)**

a) Define *permeability*.
b) What do you mean by *hydrology*?
c) List any four components of hydro-geological cycle.
d) What do you mean by *hydrologic cycle*?
e) What is salt water intrusion?
f) State the uses of rational method of peak flow for urban areas.
g) Define flow net. How, this technique can be helpful for groundwater flow analysis?
h) Distinguish between *artesian aquifer* and *water table aquifer*.
i) Write any two effects of urbanization on runoff.
j) State different types of *aquifers*.

Q2 **(a)** Define storage coefficient and transmissibility coefficient. **(5)**
(b) What is hydrological cycle? Briefly discuss the various components of hydrological cycle with the help of suitable sketch. **(5)**

Q3 **(a)** Define Darcy's law and its limitations. **(5)**
(b) The discharge from a fully penetrating well operating under steady state in a confined aquifer of 35m thickness is 3000 lpm. Value of drawdown at two observation wells 12 m and 120 m away from the well are 3 m and 0.3 m respectively. Determine the permeability of the aquifer. **(5)**

Q4 **(a)** Define specific yield, specific retention and porosity. Derive a relationship between them. **(5)**
(b) Explain the seismic retraction method for subsurface exploration of ground water. **(5)**

Q5 **(a)** State the expression for yield from well in an unconfined aquifer. State the names of each notation used. **(3)**
(b) Calculate the discharge in m^3/day from the tube well using the following data. Diameter of tube well=45cm, Drawdown at the well=12m, Length of the strainer=30m, Radius of influence of the well-200m, Coefficient of permeability=0.01cm/sec. Aquifer is unconfined. **(7)**

Q6 **(a)** What is an aquifer? Give an account of different types of aquifers with suitable sketches. **(5)**

(b) On a particular day, in a field well the initial water table was observed 6 meters below the ground level. The water table was lowered 8 meters below the ground surface when quantity of 4,00,000 cubic meters of water was pumped per square kilometer. Compute the specific yield, specific retention of soil assuming the porosity as 30% and there are no other losses. **(5)**

Q7 What do you mean by permeability of soil? Explain the determination of permeability by constant head parameter. **(10)**

Q8 **Write short notes on any TWO :** **(2x5)**

a) Municipal and industrial sources for ground water pollution

b) Well spacing

c) Basin management

d) Unconfined aquifer