KERALA AGRICULTURAL UNIVERSITY

B.Tech (Agrl.Engg) Degree Programme 2013 Admission
VIth Semester-Final Examination-July-2016

Cat. No: Iden.3207 **Marks: 50**
Title: Ground water,wells and pumps (2+1) **Time : 2 hours**

I. Fill up the blanks/ True or False **(10 x 1=10)**

1. The upper surface zone of saturation is called _____.
2. Sum of specific yield and specific retention is _____.
3. The elevation to which the water level rises in a well in artesian aquifer is _____.
4. The piezometric surface is analogous to the water table in _____ aquifer .
5. Leakage factor is the property of the _____ aquifer.
6. The unit of hydraulic conductivity is _____.
7. The line joining the equal elevation of water table is _____.
8. What is NPSH _____.
9. Porosity is less than specific yield (True/False)
10. Hydraulic resistance is reciprocal of leakage factor (True/False).

II Answer any FIVE of the following **(5 x 2=10)**

1. Write the working principle of the submersible pump.
2. Differentiate aquitard and aquiclude .
3. Explain friction head,pressure head and velocity head.
4. Write the different classifications of pumps.
5. Briefly explain flow net analysis.
6. Salient features of well development.
7. In an area of 100 ha, the water table dropped by 4.5 m, if the porosity is 30% and the specific retention is 10%,determine (I) specific yield of aquifer (ii) change in ground water storage.

III. Write short notes on ANY FIVE of the following **(5 x 4=20)**

1. How do you carry out pumping test and recovery test?.
2. Explain the operation of centrifugal pump with neat diagram.
3. Discuss about pump characteristics curves.
4. Draw the neat diagram of hydraulic ram and explain the working.
5. Briefly explain about various indigenous water lifting devices.
6. Explain about ground water exploration techniques.
7. A 30 cm well fully penetrates a confined aquifer 30 m deep. After a long period of pumping at a rate of 1200 lpm, the drawdown in the wells at 20 and 45 m from the pumping well are found to be 2.2 and 1.8 m respectively. Determine the transmissibility of the aquifer. What is the drawdown in the pumped well?.

IV. Write essay on ANY ONE of the following **(1 x 10=10)**

1. Discuss the methods of artificial recharge of ground water.
2. a) Derive the equation for flow into unconfined aquifer under steady state condition.
   b) Derive the equation for flow into confined aquifer under steady state condition.

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