



KERALA AGRICULTURAL UNIVERSITY
B. Tech. (Agri. Engg.) 2023 & Previous Admissions
VI Semester Final Examination – June 2026

Iden 3209

Ground water, Wells and Pumps (2+1)

Marks: 50
Time: 2 hours

- (10x1=10)**
- I Fill in the blanks**
- 1 The volume of water retained by molecular and surface tension forces, against the force of gravity, expressed as a percentage of the total volume of saturated aquifer, is called
 - 2 A geologic formation with no interconnected pores and hence neither absorb nor transmit water is called an
- Define the following**
- 3 Isotropic aquifer.
 - 4 Transmissibility coefficient.
 - 5 Hydraulic conductivity
 - 6 Priming of a pump.
- State True or False**
- 7 Propeller pumps are efficient for application under high-discharge low-head applications.
 - 8 The practical suction lift of a centrifugal pump is limited to 10.33 m.
 - 9 In the case of a centrifugal pump, the capacity varies as the square of the impeller speed.
 - 10 In a turbine pump there is strong centrifugal action, whereas in the case of a propeller pump there is no centrifugal action.
- (5x2=10)**
- II Write short notes on ANY FIVE of the following**
- 1 Distinguish between confined and unconfined aquifer.
 - 2 Distinguish between open well and tube well.
 - 3 Distinguish between artesian well and skimming well.
 - 4 Distinguish between static suction lift and static suction head
 - 5 Distinguish between water horse power and shaft horse power
 - 6 Distinguish between positive displacement pump and variable displacement pump
 - 7 Distinguish between deep well turbine pump and deep well submersible pump.
- (5x4=20)**
- III Answer ANY FIVE of the following**
- 1 Describe the common methods to increase the yield of an open well.
 - 2 An open well is to be constructed in a fine-sand subsoil formation. The discharge of the well anticipated to be 16 m³/hr under a depression head of 4m. Determine the diameter of the well. The specific yield value for the given subsoil is 0.5.
 - 3 A 20cm well fully penetrates a confined aquifer 20m deep. After a long period of pumping at a rate of 1000 lpm, the drawdowns in the wells at 20 and 50 m from the pumping well are found to be 2.2 and 1.7 m, respectively. Determine the transmissibility and hydraulic conductivity of the aquifer.
 - 4 Describe the working principle of an Archimedian Screw.
 - 5 Explain the working principle of a centrifugal pump
 - 6 Describe the effect of change of pump speed and impeller diameter on the performance of centrifugal pumps.
 - 7 Explain the working principle of an air-lift pump.
- (1x10=10)**
- IV Write an essay on ANY ONE of the following**
- 1 What is well development? Explain the commonly used methods of developing tube wells.
 - 2 Explain the working principle of a jet pump with a neat sketch. Also make a comparison between centrifugal pumps and jet pumps
