



KERALA AGRICULTURAL UNIVERSITY
B. Tech. (Agrl. Engg.) 2021 Admission
VI Semester Final Examination – June 2024

Iden.3209

Groundwater, Wells and Pumps (2+1)

Marks: 50
Time: 2 hours

- I Fill in the blanks (10x1=10)**
1. The quantity of water that a unit volume of aquifer will yield when drained by gravity is called
 2. is a property of a semi-pervious layer of leaky aquifer.
 3. The distance from the centre of the well to the outer boundary of cone of depression is termed as
 4. Most ground water withdrawn in India is used for
 5. The equation for steady radial flow to a well was first developed by
 6. The most popular indigenous water lift for medium head operation is
 7. Doubling the screen diameter, the increase in well discharge is from to%
 8. Practically the suction lift of the centrifugal pump is less thanm
 9. The pump most suitable for delivering large quantities of water under low head is Pump.
 10. When two centrifugal pumps are operated in series, the discharge
- II Write short notes on ANY FIVE of the following (5x2=10)**
1. Distinguish between confined and unconfined aquifers.
 2. How mud cake formed in rotary drilling? How does it help in drilling process?
 3. What is submersible pump?
 4. A centrifugal pump at its best point of efficiency discharges 0.03 cubic meters of water per second against a total head of 50 m when the speed is 1500 rpm. Compute the specific speed of the pump.
 5. What are the various types of losses in well screens?
 6. What is hydraulic ram?
 7. Distinguish between electric logging and gamma ray logging.
- III Answer ANY FIVE of the following (5x4=20)**
1. Explain in brief the working of a centrifugal pump. Differentiate between the cavitation and water hammer in pumping. How are they overcome?
 2. Explain the steady state flow to wells in confined aquifer with neat sketch.
 3. A pump lifts 93600 liters of water per hour against the total head of 21 meters. Compute the water horse power. If the pump has an efficiency of 72%, what size prime mover is required to operate the pump? If a direct drive electric motor having an efficiency of 80 % is used to operate the pump, compute the cost of electrical energy in a month of 30 days. The cost of electrical energy is 2 rupees per unit.
 4. Define shallow dug well and deep dug well. Explain in brief the site selection criteria for the open well.
 5. What is priming in centrifugal pumps? Which are the different methods used in priming process?
 6. What are the major advantages of a submersible pumps in comparison to the vertical turbine pumps?
 7. What is the major consideration in choosing the diameter of housing pipes in tube wells?

IV

Write an essay on ANY ONE of the following

(1x10=10)

1. Artificial groundwater recharge techniques and its importance in agriculture
2. Drilling techniques for the consolidated and unconsolidated formations
