



**KERALA AGRICULTURAL UNIVERSITY**  
**B.Tech.(Agrl. Engg.) 2018 Admission**  
**VI Semester Final Examination- December 2021**

**Iden. 3209**

**Ground water, Wells and Pumps (2+1)**

**Marks: 50**

**Time: 2 hours**

**I Fill in the blanks**

**(10x1=10)**

1. In centrifugal pump, the number of vanes made in impeller varies from \_\_\_\_\_
  2. The most efficient indigenous water lifting device is \_\_\_\_\_
  3. The reciprocating pump has a \_\_\_\_\_ flow.
  4. Variable displacement pumps are \_\_\_\_\_
  5. A pump, which discharge capacity varies with pump speed is called as \_\_\_\_\_
- State True or False**
6. Confined aquifer is also known as artesian aquifer
  7. A foot valve is used in a centrifugal pumping system so as to keep it primed
  8. Efficiency of air lift pumps depends on percentage of submergence
  9. Submersible pumps are multistage centrifugal pumps
  10. Discharge of centrifugal pump varies directly with impeller casing

**II Write short notes on ANY FIVE of the following**

**(5x2=10)**

1. Define aquifer and mention its types
2. Darcy's law and its limitation
3. Mention the classification of wells
4. Differentiate between single acting and double acting reciprocating pump.
5. Write down the working principle of a reciprocating pump
6. Name the accessories of centrifugal pumps
7. Define NPSH

**III Answer ANY FIVE of the following**

**(5x4=20)**

1. Explain the determination of aquifer parameters by Jacob method
2. Write a short note on losses in well screen
3. Write a short note on multiple well systems
4. Write a short note on total pumping head
5. Write a short note on design of tube well
6. Find the power required to drive a centrifugal pump which delivers 40 litres of water per second to a height of 20 m through a 150 mm diameter and 100 m long pipeline. The overall efficiency of pump is 70% and Darcy's  $f = 0.06$  for the pipeline. Assume inlet losses in suction pipe equal to 0.33 m.
7. Write a short note on jet pump

**IV Write an essay on ANY ONE of the following**

**(1x10=10)**

1. Describe Chow's method for the estimation of aquifer parameters
2. Explain the different methods of drilling of tube wells

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