

II B. Tech II Semester Supplementary Examinations, December - 2022
GROUND WATER HYDROLOGY, WELL AND PUMPS
 (Agricultural Engineering)

Time: 3 hours

Max. Marks: 70

Answer any **FIVE** Questions each Question from each unit
 All Questions carry **Equal** Marks

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**UNIT-I**

1 Explain about the different groundwater regions located in India. [14M]

**Or**

- 2 a) What do you understand by groundwater scenario in India? [7M]  
 b) Write about origin and importance of groundwater. [7M]

**UNIT-II**

- 3 a) What are the advantages and disadvantages of open wells? [7M]  
 b) Explain about artificial groundwater recharge methods. [7M]

**Or**

- 4 a) Explain about cable tool percussion and rotary drilling methods. [7M]  
 b) Explain about back washing method in well development. [7M]

**UNIT-III**

- 5 a) Derive an expression to determine the aquifer characteristics from an confined aquifer under unsteady state condition. [7M]  
 b) What is well interface and explain about multiple well systems? [7M]

**Or**

6 Explain in detail about aquifer properties. [14M]

**UNIT-IV**

- 7 a) What are advantages and disadvantages of reciprocating pumps? [7M]  
 b) A single-acting reciprocating pump has a piston of diameter 10cm and stroke of 20cm. The piston makes 40 double strokes per minute. The suction and delivery heads are 5 m and 10 m respectively. Find (i) the discharge capacity of the pump in l/min, (ii) the force required to work the piston during the suction and delivery strokes, if the efficiency of the suction and delivery strokes are 50 and 60 per cent, respectively and (iii) the hp required by the pump for its operation. [7M]

**Or**

- 8 a) Explain about the performance and adaptability of common types of indigenous water lifts. [7M]  
 b) Derive equation for power from windmill. [7M]

**UNIT-V**

- 9 a) Briefly explain the design of centrifugal pump. [7M]  
 b) Write a short note on Submersible pump with neat labeled diagram. [7M]

**Or**

- 10 a) Explain briefly about propeller pump and its Principle of operation. [7M]  
 b) Explain about the installation and trouble shooting of centrifugal pump. [7M]

