

**B.Tech. Civil (Water Resources Engineering)**

**Term-End Examination**

**June, 2018**

00543

**ET-532(B) : GROUND WATER DEVELOPMENT**

*Time : 3 hours*

*Maximum Marks : 70*

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*Note : Answer any five questions. Neat and labelled sketches carry due weightage. Use of calculator is permitted.*

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1. (a) Discuss the laboratory determination of hydraulic conductivity of soil giving the sketch of constant head permeameter set-up. 7
- (b) What is understood by specific yield and specific retention ? What is their importance? 7
2. (a) Explain the concept of transmissivity as applied to both unconfined and confined aquifers. 7
- (b) What are flow nets ? Explain their structure and utility. 7

3. (a) Explain the behaviour of igneous and metamorphic rocks as aquifers. 9
- (b) Enlist the factors controlling the hydrologic properties of sandstones. 5
4. (a) Explain the basic principles of a pumping test of aquifers. Why is it conducted ? 6
- (b) Discuss the equipment used and the method of measuring the discharge while conducting a pumping test. 8
5. (a) Outline the use of geochemical methods in the exploration of groundwater. 9
- (b) What is meant by well inventory ? Explain. 5
6. (a) Discuss the construction and use of dug wells, bore wells and tube wells. 9
- (b) Explain important hydrogeological factors for design of wells. 5
7. (a) Explain : Kelly's ratio, Permeability Index, Residual Sodium, Soluble Sodium percentage. 8
- (b) What is leaching requirement ? State its importance. How will you determine it ? 6

8. Write short notes on any *four* of the following :

$$4 \times 3 \frac{1}{2} = 14$$

- (a) Energy budget
  - (b) Precipitation
  - (c) Rain gauge
  - (d) Infiltration
  - (e) Water quality criteria for industrial use
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