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ET-532(B)

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B.Tech. Civil (Water Resources Engineering)

Term-End Examination

June, 2010

ET-532(B) : GROUND WATER DEVELOPMENT

Time : 3 hours *Maximum Marks : 70*

Note : *Answer **any five** questions. Give neat, labelled diagrams in support of your answers.*

1. (a) Explain the procedure for the experimental determination of the validity of Darcy's law with the help of a labelled sketch of the set-up. **8**

   (b) Derive, $Q = -KiA$ with reference to (a) above ; and explain the relevance of negative sign. **6**

2. (a) With the help of the conceptual diagram, explain the term storativity of : (i) unconfined aquifer, (ii) confined aquifer. **6**

   (b) How does the concept of transmissivity vary from the concept of hydraulic conductivity ? Mention their relative usefulness. **8**

3. (a) For a well in confined aquifer, find radius of cone of depression (R) in meters from the following data. 5

$Q = 2.5m^3/day$; $K = 1.75m/day$;
$H = 9.87m$; $h = 3.89$ m ; $b = 5.78$ m ;
$r = 3.25$ m.

(b) Write a brief note on the integrated approach for ground water exploration. 9

4. (a) What is well-inventory ? Explain its importance. 7

(b) Explain well efficiency and its usefulness. 7

5. Discuss the following in connection with the design of a tube well : 14

(a) Diameter and depth of the well

(b) Casing

(c) Screen

(d) Gravel pack

6. (a) Explain the influence of man-made factors on the composition of ground water. 3

(b) Write an essay on "quality water for agriculture" giving emphasis on chemical constituents. 11

7. Sketch out the recording mechanism of Natural Syphon Rain gauge. Explain its working and relative advantages and limitations. 9+5

8. Write short notes on ***any four*** of the following : **4x3½=14**

(a) Potable water

(b) Leaching requirement

(c) Thiessen method of computing precipitation

(d) Watershed development

(e) Well development