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ET-532(B)

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B.Tech. Civil (Water Resources Engineering)

Term-End Examination

December, 2010

ET-532(B) : GROUND WATER DEVELOPMENT

Time : 3 hours *Maximum Marks : 70*

Note : Answer *any five* questions. All questions carry equal marks. Answer in your own language. Give neat and labelled sketches.

1. With reference to rock porosity; explain the following :- **14**

   (i) intergranular openings;

   (ii) openings due to jointing-cum-fracturing;

   (iii) vesicles in a basalt;

   (iv) openings due to solution of limestone; and

   (v) specific yield.

2. (a) Discuss the storativity of un-confined and confined aquifers. **7**

   (b) Explain the concept of transmissivity of unconfined and confined aquifers. **7**

3. With regard to flow towards a well through the surrounding aquifer, discuss with the help of sketches the following :- **14**

   (i) nature of converging flow.

   (ii) changes in depth and radius of depression after equal time intervals, if the pumping rate is constant.

4. With reference to ground water exploration, discuss the following :- **14**

   (i) Investigations based on toposheets.

   (ii) Aerial photographs.

5. Give neat and labelled diagram and explain the following :- **14**

   (i) Dugwells in unconsolidated rocks;

   (ii) Dugwells in consolidated rocks;

   (iii) Bore wells.

6. Discuss the following :- **14**

   (i) physical qualities of ground water;

   (ii) chemical qualities of ground water;

   (iii) bacteriological qualities of ground water.

7. Explain the following :- **14**

(i) infiltration curves - time vs infiltration;

(ii) Horton's infiltration curves;

(iii) Hydrographs.

Bring out the significance of each type of curve.

8. Write short notes on ***any four*** of the following :- **14**

(i) Effect of solution channels on well yields in lime stones.

(ii) Pumping test site.

(iii) Water table maps.

(iv) Tube wells.

(v) Well development.

(vi) Watershed Management.
