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ET-531(B)

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B.Tech. Civil (Water Resources Engineering)

Term-End Examination

June, 2010

ET-531(B) : SOIL SCIENCE

Time : 3 hours *Maximum Marks : 70*

Note : *Answer **any five** questions. All questions carry **equal** marks.*

1. Distinguish between the following : **7x2=14**
   (a) Sedimentary and Metamorphic Rocks
   (b) Laterization and Pedolization
   (c) Colluvium and Alluvium
   (d) Soil texture and Soil structure
   (e) Sticky limit and Plastic limit
   (f) Symbiotic and non-symbiotic nitrogen fixation
   (g) Peak and Muck

2. Explain the concept of : **7**
   (a) Soil Plant Atmosphere Continuum (SPAC). List the measures to minimize the evaporation from bare soils.

(b) Explain the concept of Lime Requirement. Also describe the method to calculate the lime requirement of a problem soil. 7

3. (a) What is active and reserve acidity in soils ? How do these affect the nutrient availability in soils ? 7

(b) Explain carbon cycle with the help of a neat diagram. 7

4. (a) What is meant by infection in plants ? Enumerate the cammon modes of entry of pathogens in the plant system. 7

(b) Distinguish between soil micro flora and soil macro flora. Describe the characteristics of different types of soil microflora. 7

5. (a) What is Ion exchange capacity of a soil ? How does it affect the nutrient availability in the soil ? 7

(b) List major soil types (at least 10) of India. Explain the features of "Tavai Soil and Black Soil. List important crops grown in these soils. 7

6. (a) Describe the visual deficiency symptoms of N, P and K in the plants. 7

(b) What is understood by soil texture ? How soil texture can be determined with the help of field methods ? List different soil classes based on texture. 7

7. Distinguish between soil porosity and void ratio. Explain the importance of :

(a) Soil porosity in water retention characteristics of soils and moisture uptake by plants. 7

(b) Distinguish between transpiration and evapotranspiration. Discuss the importance of transpiration in relation to the water uptake by the plants. 7