

B.Tech. Civil (Water Resources Engineering)

Term-End Examination

June, 2018

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ET-531(B) : SOIL SCIENCE

Time : 3 hours

Maximum Marks : 70

Note : Attempt any five questions. Neat and labelled diagrams carry due weightage. Use of calculators is permitted.

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1. (a) How does the formation of soil take place? 2
 - (b) Discuss the factors affecting the formation of soil. 10
 - (c) List the system of nomenclature of soil forming processes. 2

 2. (a) Explain the following soil analysis methods :
 - (i) Hydrometric method
 - (ii) Pipette method 7
 - (b) Explain soil consistency. Describe Atterberg's limits of soil and their significance. 7

3. (a) Outline the process of soil aeration, diffusion and mass flow in a given mass of soil. 7
- (b) Explain thermal capacity, thermal conductivity and diurnal-cum-annual soil temperature variations. 7
4. (a) Explain hydrogen bonding, cohesion, adhesion and surface tension. 6
- (b) Explain the phenomenon of hysteresis as a soil moisture curve. 8
5. Explain five major soil groups of India with their merits and demerits with respect to agriculture. 14
6. Describe taxonomy of soils and outline the related horizons. 14
7. How do different environmental factors influence microbial activity in soils? 14
8. Write short notes on any **four** of the following : $4 \times 3 \frac{1}{2} = 14$
- (a) Nitrogen cycle
- (b) Biofertilizers
- (c) Histological changes in plants cells
- (d) Soil macroflora
- (e) Salt affected soils