

B.Tech. Civil (Water Resources Engineering)

Term-End Examination

00257 December, 2017

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.

1. Discuss in detail, the physical and chemical weathering undergone by rocks and minerals. How do they help in soil formation? 14

2. (a) Explain what is understood by Soil Morphology. 6
(b) Briefly discuss 'characterisation of soil profile' and 'soil horizons'. 8

3. (a) What is understood by Soil Structure? 8
(b) Explain briefly, wet sieving as a procedure for testing water stability of soil aggregates. 4
(c) List the factors affecting soil aggregates. 2

4. (a) Describe the structure of a water molecule and its property of polarity. 7
- (b) Differentiate between the following : 7
- (i) Pressure potential and Osmotic potential
- (ii) Energy per unit mass and Energy per unit volume
5. (a) Explain Buffering, Soil Acidity and Soil Alkalinity. 7
- (b) How can salt-affected soil be ameliorated ? 7
6. (a) What is understood by Land Evaluation ? 2
- (b) Discuss the assessment of soil productivity by (i) Indian criteria, and (ii) US criteria. 10
- (c) Draw a block and line diagram depicting the stages in indirect land evaluation. 2
7. (a) Explain plant disease resistance. 7
- (b) Explain the control measures for principal plant diseases. 7

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

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

- (a) Carbon Cycle
 - (b) Humus Synthesis
 - (c) Symbiotic Nitrogen Fixation
 - (d) Plant Pathogenic Micro-organisms
 - (e) Soil Plant Atmosphere Continuum
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