

**B.Tech. Civil (Water Resources
Engineering)**

Term-End Examination

June, 2011

ET-531(B) : SOIL SCIENCE

Time : 3 hours

Maximum Marks : 70

Note : Answer any five questions. All questions carry equal marks. Well labelled diagrams shall carry due weightage.

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| 1. | (a) | Discuss the formation of : igneous, sedimentary and metamorphic rocks, respectively. | 6 |
| | (b) | Why is quartz a mineral ? Explain. | 3 |
| | (c) | Sketch out and explain a soil pedon. | 4 |
| | (d) | What is a soil profile ? | 1 |
| 2. | (a) | Describe the method of grain-size analysis by pipette method. | 7 |
| | (b) | Explain the carbon cycle with the help of a neat diagram. | 7 |
| 3. | Explain : | | 5+3+3+3=14 |
| | (a) | thermal capacity of soil ; | |
| | (b) | soil consistency ; | |
| | (c) | Atterberg limits | |
| | (d) | soil crusting | |

4. Discuss soil taxonomy under following heads : 14
(a) diagnostic horizons ;
(b) soil moisture regimes ;
(c) soil temperature regimes.
5. Discuss : soil macroflora, soil microflora ; soil 14
bacteria ; symbiotic nitrogen fixing, and
non-symbiotic nitrogen fixing bacteria and
cellulose decomposing bacteria.
6. (a) Discuss soil algae and its role. 4+5+5=14
(b) What are soil fauna ? Explain.
(c) Explain microbial metabolism and soil
enzymes.
7. (a) Describe phosphorus cycle and sulphur 5+5=10
cycle.
(b) Explain the role of potassium, magnesium 4
and zinc as plant nutrients.
8. Write short notes on the following : 4x3½=14
(a) Disease symptoms of soils
(b) Field sanitation
(c) Mechanism of nitrogen fixation
(d) Parasitism
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