

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

**Term-End Examination
June, 2013**

ET-531(B) : SOIL SCIENCE

Time : 3 hours

Maximum Marks : 70

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

1. (a) What is soil morphology ? Differentiate between soil horizons and soil profile. 10
(b) What are bench mark soils ? 4
2. (a) Explain the concept of Land Capability. What are the main criteria for land evaluation for its usefulness? 5
(b) Describe in details the criteria adopted in classifying the soils into irrigability classes - for semi - arid and arid regions. Discuss as to why the soil permeability criteria is not applicable in deep black soils for this purpose. 9
3. (a) Discuss the role of soil colloids in relation to plants. 3.5
(b) What is the significance of CN ratio ? 3.5
(c) What do you mean by Cation Exchange Capacity (CEC) and how does it affect the soil properties? 7

4. (a) Distinguish between red soils and lateritic soils. 3.5
- (b) How the alluvial plains are formed ? 3.5
- (c) Why do the peat and marshes have low pH ? 3.5
- (d) What are the techniques to identify the deficiency of plant nutrients? 3.5
5. (a) Write short notes on : 3x3=9
- (i) Carbon Cycle
- (ii) Nitrogen Cycle, and
- (iii) Decomposition of organic matter
- (b) Differentiate between the Nitrogen fixation mechanisms of Azotobacter and Rhizobium. 5
6. (a) Define plant pathogens. Also state various symptoms of plant diseases. 4
- (b) Differentiate between Morphological Resistance and Functional Resistance. 5
- (c) Differentiate between Disease exclusion and Disease Eradication. 5
7. (a) Explain the following : 6
- (i) Gravitational head
- (ii) Pressure head
- (iii) Total hydraulic head.
- (b) Explain the importance of integrated nutrient management. 4
- (c) Define infiltration. Describe the working Blocked furrow infiltrometer. 4

8. (a) State the laws governing soil water movement. 8
- (b) Explain the procedure of determining - 6
evapo transpiration from Bare soil surface.
What are the possible measures to reduce
the same ?
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