No. of Printed Pages : 3

ET-531(B)

B.Tech. Civil (Water Resources Engineering)

Term-End Examination

00181

June, 2015

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.*

1. (a) Differentiate between soil morphology and soil micro-morphology with the help of examples. 7

(b) How will you determine the following (any ***two***) : $2 \times 3\frac{1}{2} = 7$

(i) Age of soil

(ii) Soil texture

(iii) Soil structure

2. (a) What is the classical difference between pressure potential and osmotic potential ? What are the different ways of expressing soil water potential ? 7

(b) Write short notes on the following : $2 \times 3\frac{1}{2} = 7$

(i) Soil consistency

(ii) Soil fertility

3. (a) Explain soil organic matter. How does it affect colloidal behaviour of soil ? 7

(b) Explain soil colloids. What is the role of organic matter in this regard ? What makes colloids more active ? What are the different processes exhibited by soil colloids ? 7

4. (a) Differentiate between active and reserve acidity. How does liming help neutralizing acidity ? How will you calculate lime requirement ? 7

(b) What is the basis to classify soil as acidic, basic or salty ? How does gypsum help in amelioratory soil quality ? How will you calculate gypsum requirement per unit area ? 7

5. (a) What are the features of soil survey for mapping ? Differentiate between soil profle and soil horizons. 7

(b) What are the different components of soil survey report ? How do we interpret survey report ? What are the recent advances in soil survey techniques ? 7

6. (a) Differentiate between the following : $2 \times 3\frac{1}{2} = 7$

(i) Orders and Suborders

(ii) Groups and Subgroups

(b) Describe the importance of land evaluation. How are the Indian and US criteria for determining land productivity different ? 7

7. (a) What is the role of soil enzymes in soil biochemical reaction ? How does micro-metabolism help in this regard ? 7

(b) What are the factors which cause increased activity of earthworm in soil ? Explain the environmental factors which influence microbial activities in the soil. 7

8. (a) How does transformation of mineral nutrition take place ? Also, differentiate between the mechanism of nitrogen fixation by Rhizobium and Azotobacter. 7

(b) Write short notes on the following : $2 \times 3\frac{1}{2} = 7$

(i) Bio-fertilizers

(ii) Disease symptoms
