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SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR  
(AUTONOMOUS)

B.Tech II Year II Semester Supplementary Examinations February-2022

PRINCIPLES OF SOIL SCIENCE

(Agricultural Engineering)

Time: 3 hours

Max. Marks: 60

**PART-A**

(Answer all the Questions 5 x 2 = 10 Marks)

- 1 a Explain about Pedological and edaphological concepts of soil. 2M
- b What is soil water retention and soil water movement? 2M
- c What is the buffering capacity of the soil? 2M
- d What is meant by acid soils? How it is formed? 2M
- e Define organic and inorganic fertilizers. 2M

**PART-B**

(Answer all Five Units 5 x 10 = 50 Marks)

**UNIT-I**

- 2 a Briefly explain about classification of soils. 5M
- b What is the weathering in rocks formation? Explain about different rocks and minerals. 5M

**OR**

- 3 a How soils are classified? What are the methods generally used for determination of soil texture? Write procedure for any one method. 5M
- b Explain the importance of Igneous, Sedimentary and Metamorphic rocks in soil formation. 5M

**UNIT-II**

- 4 a Define the texture and structure in soil. Briefly explain about the soil water relationship. 5M
- b How bulk density, porosity, moisture content, soil texture and structure effects on thermal properties of soil? 5M

**OR**

- 5 a Explain the primary and secondary tillage influence on crop performance. 5M
- b Define soil heat, soil resistivity and heat conductance in soil. 5M

**UNIT-III**

- 6 a Define soil colloids and explain their significance. List out types of colloids. 5M
- b What are the factors influencing the ion exchange? 5M

**OR**

- 7 a What is CEC and AEC in soil? How it is important in agricultural engineering? 6M
- b What is base saturation in soil? How CEC can be improved in soil? 4M

**UNIT-IV**

- 8 a What is reclamation of acid soils? Write a procedure for reclamation of acid soils. 6M
- b Write a note on nutrient availability in acid and saline soils. 4M

**OR**

- 9 What is meant by saline soils? Write about the characteristics of saline soils. 10M

**UNIT-V**

- 10 a What is meant by bio fertilizer and liquid fertilizer? Explain their advantages. 5M  
b Define Soil fertility. What are the factors influencing soil fertility? 5M
- OR**
- 11 a Explain about Liquid fertilizer solubility and compatibility. 5M  
b What is meant by chemical fertilizer? Write the classification of fertilizers. 5M