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**SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR  
(AUTONOMOUS)****B.Tech II Year II Semester Regular Examination October-2020****PRINCIPLES OF SOIL SCIENCE**

(Agricultural Engineering)

Time : 3 Hours

Max. Marks: 60

**PART –A****(Answer all the questions) 5x2 =10M**

- |          |          |   |           |
|----------|----------|---|-----------|
| <b>1</b> | <b>a</b> | Which type of weathering causes formation of soil?                | <b>2M</b> |
|          | <b>b</b> | Explain influence of tillage on soil physical properties.         | <b>2M</b> |
|          | <b>c</b> | What are the factors influencing the ion exchange?                | <b>2M</b> |
|          | <b>d</b> | Differentiate between acid soils and saline soils.                | <b>2M</b> |
|          | <b>e</b> | Define liquid fertilizer. How liquid fertilizers benefit farmers? | <b>2M</b> |

**PART –B****(Answer all Five units) 5x10 =50M****UNIT - I**

- |          |          |   |           |
|----------|----------|---|-----------|
| <b>2</b> | <b>a</b> | What is weathering of rocks? Explain about different rocks and minerals.  | <b>5M</b> |
|          | <b>b</b> | Define physical, chemical and biological weathering. How physical, chemical and biological weathering influence soil formation? | <b>5M</b> |

**OR**

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|----------|----------|---|-----------|
| <b>3</b> | <b>a</b> | Explain the stepwise procedure about the formation and composition of soil. | <b>5M</b> |
|          | <b>b</b> | Briefly explain the classification of soils.                                | <b>5M</b> |

**UNIT - II**

- |          |          |  |           |
|----------|----------|--|-----------|
| <b>4</b> | <b>a</b> | Define texture and structure of soil. Briefly explain soil water relationship. | <b>5M</b> |
|          | <b>b</b> | Write the primary and secondary tillage influence on crop performance.         | <b>5M</b> |

**OR**

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|----------|----------|---|-----------|
| <b>5</b> | <b>a</b> | How bulk density, porosity, moisture content, soil texture and structure effect the Thermal Properties of soil? | <b>5M</b> |
|          | <b>b</b> | Briefly explain the soil, plant and water relationship. List out the physical properties of soil.               | <b>5M</b> |

**UNIT - III**

- |          |          |  |           |
|----------|----------|--|-----------|
| <b>6</b> | <b>a</b> | What is EC in Soil Science? Write the importance of EC in soil. How does EC affect plant growth? | <b>5M</b> |
|          | <b>b</b> | What are the properties of soil colloids? Explain about origin of charge on colloids.            | <b>5M</b> |

**OR**

- 7 a What is base saturation of soil? How CEC of soil can be improved? **5M**  
b Define ion exchange. Write the significance of ion exchange. **5M**

**UNIT -IV**

- 8 a Define acid soils. How acid soils are formed? Write the characteristics of acid soils. **5M**  
b How sodic soils are formed? Write the characteristics of sodic soils. **5M**

**OR**

- 9 a Write a note on nutrient availability in acid and saline soils. **5M**  
b Explain the purpose of reclamation of soil? **5M**

**UNIT -V**

- 10 a Write brief note on classification of nutrients with examples. **5M**  
b Write about liquid fertilizer solubility and compatibility. **5M**

**OR**

- 11 a Define fertilizer. Write the classification of fertilizers. **5M**  
b Differentiate between bio fertilizer and liquid fertilizer. Write the advantages of bio fertilizer. **5M**