Reg. No. \_\_\_\_\_\_\_\_\_\_\_\_\_



**End Semester Examination – Nov / Dec – 2019**

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| **Code :** | **18AG1013** | **Duration :** | **3hrs** |
| **Sub. Name :** | **FUNDAMENTALS OF SOIL SCIENCE** | **Max. Marks :** | **100** |

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| **Q. No.** | **Questions** | **Course Outcome** | **Marks** |
| **PART – A (20 X 1 = 20 MARKS)** | | | |
| 1. | Give the size specification for the four soil particles. | CO2 | 1 |
| 2. | Give an example for acid and basic igneous rock. | CO1 | 1 |
| 3. | Define Field capacity of soil. | CO2 | 1 |
| 4. | Give an example for 1:1, 2:1, 2:1:1 type clay minerals. | CO1 | 1 |
| 5. | The sources of negative charge on clays are \_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_. | CO3 | 1 |
| 6. | Define base saturation. | CO3 | 1 |
| 7. | Define chelation. | CO4 | 1 |
| 8. | Differentiate between Bulk density and particle density. | CO2 | 1 |
| 9. | The unit of expression of CEC is \_\_\_\_\_\_\_\_\_\_\_\_\_, and EC is \_\_\_\_\_\_\_\_\_\_\_\_\_. | CO3 | 1 |
| 10. | Define biological magnification. | CO4 | 1 |
| 11. | List out the orders of soil taxonomy. | CO1 | 1 |
| 12. | What are the two mechanisms by which exchange of gases between soil air and atmosphere is facilitated? | CO2 | 1 |
| 13. | What is meant by CEC? | CO3 | 1 |
| 14. | The major soil type of India is \_\_\_\_\_\_\_\_\_\_. | CO4 | 1 |
| 15. | What are the determinants of soil colour? | CO2 | 1 |
| 16. | Give some examples of inorganic contaminants. | CO4 | 1 |
| 17. | What is soil organic matter? | CO3 | 1 |
| 18. | List out the fundamental pedogenic processes. | CO1 | 1 |
| 19. | Differentiate between soil structure and soil texture. | CO2 | 1 |
| 20. | Who proposed the first scientific classification of soils? | CO4 | 1 |

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| **PART – B (10 X 5 = 50 MARKS)**  **(Answer any 10 from the following)** | | | |
| 21. | Discuss how soil is formed due to the various active soil forming factors. | CO1 | 5 |
| 22. | What are the sources of soil heat? Explain the influence of soil temperature on plant growth. | CO2 | 5 |
| 23. | Discuss the ion exchange reactions in soil. | CO3 | 5 |
| 24. | Discuss the factors affecting bulk density and porosity of the soil. | CO2 | 5 |
| 25. | Explain in detail the classification of rocks based on formation. | CO1 | 5 |
| 26. | Discuss the effect of pH on nutrient availability. | CO3 | 5 |
| 27. | What is soil aeration? What are the factors affecting soil aeration? | CO2 | 5 |
| 28. | Explain the functions of soil microorganisms in relation to soil health. | CO4 | 5 |
| 29. | Discuss the kinds of soil pollution and briefly explain the inorganic contaminants. | CO4 | 5 |
| 30. | Explain the characteristics of acid, saline and alkali soils. | CO3 | 5 |
| 31. | Explain in detail the chemical weathering of rocks. | CO1 | 5 |
| 32. | Classify the clay minerals with examples. | CO1 | 5 |

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| **PART – C (2 X 15 = 30 MARKS)**  **(Answer any 2 from the following)** | | | | |
| 33. | a. | The soil taxonomy is a multi-categorical and hierarchical system of classification. Appraise the New Comprehensive System of Soil Classification. | CO1 | 8 |
| b. | Explain the properties of soil colloids. | CO3 | 7 |
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| 34. | a. | The Indian Sub-continent has various soil types. Present a detailed compilation of those soil types. | CO1 | 8 |
| b. | Discuss the classification of soil water and the factors affecting them. | CO2 | 7 |
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| 35. | a. | Classify the soil based on its structure and explain the factors affecting soil structure. | CO2 | 8 |
| b. | Describe the role of soil organic matter on soil health and strategies to improve it. | CO3 | 7 |