

Five-Year Integrated M. Sc. Examination 2022

Earth and Environmental Science

Semester: V

Paper: EES-3-5-5

Subject: Principles of Soil Science

Time: 3 Hours

Full Marks: 40

Questions are of value as indicated on the margin
Answer question No.1 and any four from the rest.

1. Write short notes on **any four** of the following. 4×2 = 8
 - a) Alfisols
 - b) Soil forming factors
 - c) Hydration and hydrolysis
 - d) Nitrification and Denitrification
 - e) Soil water types
 - f) Mycorrhizae or root fungi

2. Discuss the soil profile in details with a schematic diagram. 8

3. (a) What are the physical and biological weathering processes for soil formation?
(b) Write short notes on alluvial soil and red soil. 4+(2+2) = 8

4. (a) What are the types and properties of soil separates?
(b) Write down the industrial and agricultural applications of feldspars and carbonate minerals. 2+(3+3) = 8

5. (a) Mention the types of soil silicates.
(b) Write down the types and properties of 2:1 type secondary mineral. 2+6 = 8

6. (a) Explain the major types of soil structure.
(b) Differentiate bulk density and particle density. 6+2 = 8

7. (a) Write down the composition of soil air.
(b) What are the factors that affect the soil air composition?
(c) Write down the beneficial and detrimental effects of soil organic matter 1+4+3 = 8