2023

AGS 1st Semester Examination

B.Sc. Hons. in Agriculture

Fundamentals of Soil Science

PAPER — AGS-103

Full Marks : 50

Time : 2 hours

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The figures in the right-hand margin indicate marks.

Candidates are required to give their answers in their own words as far as practicable.

Illustrate the answers wherever necessary.

Answer from **all** the Groups as directed.

GROUP—A

1. Answer *any* **five** questions from the following : 2×5=10

(a) What is meant by soil weathering?

(b) Define plutonic igneous rocks and give two examples.

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(c) Define particle density. Name the instrument used to measure particle density.

(d) Define bulk density. State the influence of organic matter content on bulk density.

(e) How is soil formation influenced by precipitation?

(f) Define cation exchange of soil.

(g) Mention the effect of soil pH on nutritional availability by plants.

(h) What is soil organic matter?

GROUP—B

2. Answer *any* **four** questions from the following : 5×4=20

(a) State the factors influencing porosity. 5

(b) Mention your concept on soil colloids. State the major types of soil colloids. If BD is $1{\cdot}33\ g\ cm^{-3}$ and PD is $2{\cdot}66\ g\ cm^{-3}$, what will be the porosity? 2+3=5

(Continued)

(c) What is soil pH? What is the pH range for very strong acidic soil? What is the optimum required pH for cultivating rice and sugar beet? 2+1+2=5

(d) Write the difference between Eluviation and Illuviation. Differentiate between Pedology and Edaphology. 2½+2½=5

(e) Distinguish between Pedon and Polypedon. Define Pedoturbation. 3+2=5

(f) Differentiate between Thermal and Dynamothermal metamorphism. Define exfoliation. 3+2=5

GROUP—C

3. Answer *any* **two** questions from the following : 10×2=20

(a) Distinguish between soil texture and structure. What are the different soil particles and their diameters according to USDA textural classification? What are the different types of soil structure? 2+3+5=10

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(b) Write a note on diversity of macro and microorganisms of soil. Enumerate major beneficial and harmful effects of the organisms influencing soil health. 5+5=10

(c) Give a brief description about different master horizons and sub horizons formed under a hypothetical mineral soil profile. Write in short about different agents of physical weathering. What is silicate clay? 5+2+3=10

(d) What are different agents of chemical weathering process? State different soil forming factors that lead to the evolution of true soil from regolith. Group them into passive and active factors. 3+5+2=10

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