

MAHARASHTRA AGRICULTURAL UNIVERSITIES EXAMINATION BOARD, PUNE
SEMESTER END THEORY EXAMINATION

B.Sc.(Hons.) Agriculture

Semester	: 1 (New)	Term	: First	Academic Year	: 2023-24
Course No.	: SSAC 111	Title	: Fundamentals of Soil Science		
Credits	: 3 (2+1)	Time	: 10:00 to 13:00 hrs. Total Marks : 80		
Day & Date	: Thursday, 18.01.2024				

- Note :
1. Solve ANY EIGHT questions from SECTION 'A'.
 2. All questions from SECTION 'B' are compulsory
 3. All questions carry equal marks.
 4. Draw neat diagram wherever necessary.

SECTION 'A'

- Q.1 a) Write in brief about measurement of soil colour.
b) Give biological classification of soil water.
- Q.2 a) State factors affecting soil temperature.
b) How does soil reaction influence the availability of plant nutrients? .
- Q.3 a) Write the kinds of soil pollution.
b) How does gaseous exchange take place between soil and atmosphere?
- Q.4 a) What is an Ion exchange? Write the importance of anion exchange.
b) Explain in brief about physical weathering of rocks.
- Q.5 a) Write the sources of soil organic matter and give composition of plant residues.
b) Enlist different soil forming processes. Explain one specific soil forming process in brief.
- Q.6 a) Write in brief about land capability classes.
b) Define C : N ratio. Explain the significance of C : N ratio.
- Q.7 a) Define Soil science. What are the major disciplines or branches of Soil science?
b) What is meant by Humus? Write about the fractions of humic substances.
- Q.8 a) Write the beneficial and harmful effects of soil organisms.
b) Enlist major soil types of India. Explain any one in brief.
- Q.9 a) Define Soil colloids and write the general properties of soil colloids.
b) Define Igneous rocks and classify them on the basis of mode of formation.
- Q.10 a) Define Soil structure. Explain the types of soil structure.
b) Explain in brief about master soil horizons.

(P.T.O.)

SECTION 'B'

Q.11 Match the pairs:

- | 'A' | 'B' |
|------------------------|-------------------------------|
| 1) Dokuchaev | a) Precipitate rocks |
| 2) Rock phosphate | b) Active soil forming factor |
| 3) Jenny | c) $S = f(Cl, b, r, p, t)$ |
| 4) Biosphere | d) $S = f(P, Cl, O)$ |
| 5) Light mineral | e) Decomposition |
| 6) Chemical weathering | f) Granite |
| 7) Acidic rock | g) Specific gravity < 2.85 |
| 8) Mudstone | h) Argillaceous rocks |

Q.12 Fill in the blanks:

- 1) The systemic arrangement of soils into groups or categories on the basis of their characters is called as _____.
- 2) _____ is the capacity of soil of being moulded or change its shape without cracking, when stress is applied and after removing the stress, it keeps the changed shape.
- 3) _____ minerals form major part of the rocks and occur in quantities varying from 95-98%.
- 4) Normal soil contains _____ % mineral matter.
- 5) _____ consistency is optimum condition for tillage and other agricultural operations.
- 6) _____ is the study of soil from the stand point of higher plants.
- 7) Sedimentary rocks formed from decomposing vegetation under anaerobic condition, are termed as _____ rocks.
- 8) _____ is the capacity of soil to resist change in pH and maintain a relatively stable pH.

