KERALA AGRICULTURAL UNIVERSITY
B. Tech. (Agrl. Engg.)
I Semester Final Re - Examination – February 2026
2023 & Previous Admissions

Sacs.1104 **Principles of Soil Science (2+0)** **Marks: 50**
Time: 2 hours

I **Choose the correct answer** **(10x1=10)**

1. Solum consist of
   (a) A horizon
   (b) B horizon
   (c) A+B horizon
   (d) A+B+C horizon
2. Most abundant mineral in earth's crust is
   (a) Aluminium
   (b) Silicon
   (c) Oxygen
   (d) Potassium
3. Most resistant mineral in earth's crust is
   (a) Quartz
   (b) Mica
   (c) Feldspers
   (d) Olivine
4. Weathering encompasses the following processess
   (a) Disintegration
   (b) Decomposition
   (c) Both a and b
   (d) None
5. Which of the following factors are soil forming factor?
   (a) Climate
   (b) Time
   (c) Parent materials
   (d) All

Match the following

6.	Orthosilicate	(i)	Gneiss
7.	Inosilicate	(ii)	Kaolinite
8.	Phyllosilicate	(iii)	Olivine
9.	Tectosilicate	(iv)	Amphibole
10.	Basalt	(v)	Quartz

II **Write short notes on ANY FIVE of the following** **(5x2=10)**

1. Define soil.
2. Write down the volumetric composition of soil.
3. What is bulk density? Enumerate the relation between the porosity and bulk density.
4. Why gypsum is considered as a liming material?
5. Write brief about the fundamental pedogenic processes.
6. What is leaching requirement? Assume the conductivity of irrigation water is 1.08 dSm^{-1} and conductivity of soil saturation extract is 7 dSm^{-1}. Determine the leaching requirement of the soil
7. Write the key characteristics of mollisol.

III **Answer ANY FIVE of the following** **(5x4=20)**

1. Define acid soil. Write in brief about the source of acidity in soil
2. What is cation exchange capacity? Discuss about the factors affecting the cation exchange capacity.
3. An irrigation water contains 414, 12, and 24 mg L^{-1} of sodium, calcium and magnesium respectively. Calculate total cation concentration in meL^{-1}, SAR values of irrigation water, approximate EC values in mSm^{-1}, osmotic pressure of the irrigation water containing such soluble cations and total dissolved salts in mg L^{-1} of the irrigation water.
4. What is Stokes' Law? Write down the assumptions of Stokes' Law.
5. Classify the weathering process. Write in brief about the factors influences weathering of minerals.
6. Write down the characteristics of salt affected soils in the light of pH, EC, ESP and SAR.
7. What is the difference between podsolization and laterization process?

IV **Write an essay on ANY ONE of the following** **(1x10=10)**

1. Write down the criteria for quality of irrigation water on the basis of salt hazard, bicarbonate hazard, boron content.
2. What is soil structure? Explain the various indices for evaluating soil structure.

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