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**Gandhi Institute of Engineering and Technology University, Odisha, Gunupur**  
(GIET UNIVERSITY)

M. Sc. (Ag.) (First Semester - Regular) Examinations, February-2026

**SOIL-501 – Soil Physics**

(Soil Science)



Time: 2 hrs

Maximum: 50 Marks

**Answer ALL questions**  
(The figures in the right hand margin indicate marks)

**PART – A**

**(2 x 5 = 10 Marks)**

Q.1. Answer **ALL** the questions

	CO #	Blooms Level
a. Why does infiltration rate decrease with time?	CO3	L2
b. Why is drainage poor in clay soils?	CO3	L2
c. Define field capacity.	CO2	L1
d. Why does soil porosity decrease with compaction?	CO1	L2
e. Define soil texture.	CO2	L1

**PART – B**

**(6 x 5 = 30 Marks)**

Answer ANY SIX questions

	CO #	Blooms Level
2. State and explain Darcy's Law. Discuss its importance in water movement in soils.	CO3	L2
3. Describe mechanical analysis of soil. Explain hydrometer method and the principle involved.	CO2	L2
4. Define soil water potential. Explain its components and significance in plant water uptake.	CO3	L1
5. Explain hydrologic cycle and field water balance equation in detail.	CO4	L2
6. What is soil crusting? Explain its mechanism, factors affecting crust formation and control measures	CO2	L2
7. Explain the concept of soil porosity. Differentiate between macro-pores and micro-pores and state their functions	CO1	L4
8. Explain hydraulic conductivity. Discuss factors affecting it in soils	CO3	L5
9. Discuss modes of energy transfer in soils. Explain the importance of soil thermal properties in agriculture.	CO4	L2

**PART – C**

**(10 x 1 = 10 Marks)**

Answer ANY ONE question

	CO #	Blooms Level
10. Explain soil compaction and consolidation. Discuss causes, effects on soil physical properties and plant growth, and measures for alleviation of soil compaction.	CO2	L2
11. Define soil texture. Describe mechanical analysis of soil based on Stokes' law. Explain hydrometer method and discuss the importance of soil texture in agriculture.	CO2	L1
12. Describe soil tilth in detail. Explain characteristics of good soil tilth, factors affecting it, and methods to improve soil tilth for sustainable crop production	CO5	L5

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