

PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)

MSc DEGREE EXAMINATION DECEMEBR 2024
(Second Semester)

Branch- ENVIRONMENTAL SCIENCE

SOIL POLLUTION AND MANAGEMENT

Time: Three Hours

Maximum: 75 Marks

SECTION-A (10 Marks)

Answer ALL questions

ALL questions carry EQUAL marks

(10 × 1 = 10)

Module No.	Question No.	Question	K Level	CO
1	1	What is called for the matured soils which are arranged in a series of zones? a) Soil zones b) Soil layers c) Soil horizons d) Soil benches	K1	CO1
	2	What is the process by which minerals are leached downward through the soil profile? a). Translocation b). Illuviation c). Leaching d). Eluviation	K2	CO2
2	3	Which agricultural practice is likely to contribute to nutrient-related soil pollution? a). Crop rotation b). Organic farming c). Excessive fertilizer use d). Agroforestry	K1	CO1
	4	Which soil organism plays a key role in the decomposition of organic matter? a). Fungi b). Nematodes c). Earthworms d). Algae	K2	CO2
3	5	Which soil edaphic factor influences the ability of soil to retain and exchange cations? a). Soil texture b). Soil pH c). Cation exchange capacity (CEC) d). Soil moisture	K1	CO1
	6	What does Hue denotes: a). Dominant spectrum b). Lightness or brightness c). Purity d). Intensity	K2	CO2
4	7	Which laboratory technique is commonly used for total nitrogen analysis in soil? a). Gravimetry b). Spectrophotometry c). Gas Chromatography d). Kjeldahl digestion	K1	CO1
	8	What does soil available nutrient analysis assess? a). Total nutrient content b). Nutrient availability for plant uptake c). Organic matter decomposition d). Soil microbial activity	K2	CO2
5	9	Which is not a type of erosion? a). Splash erosion b). Sheet erosion c). Rill erosion d). Soft erosion	K1	CO1
	10	Which agricultural practice is considered a form of soil conservation to prevent erosion on sloping land? a). Monoculture b). Contour plowing c). Overgrazing d). Conventional tillage	K2	CO2

Cont...

SECTION - B (35 Marks)

Answer ALL questions

ALL questions carry EQUAL Marks (5 × 7 = 35)

Module No.	Question No.	Question	K Level	CO
1	11.a.	Explain the formation of core, mantle and crust.	K4	CO1
	(OR)			
	11.b.	Demonstrate the impact of plate tectonic activity on landform formation.		
2	12.a.	Illustrate how the factors such as slope, aspect, and drainage contribute to the variation in soils within a landscape?	K4	CO2
	(OR)			
	12.b.	Analyze the specific pollutants released by industrial activities into the soil.		
3	13.a.	Illustrate the role of soil physical properties in enriching soil quality.	K4	CO3
	(OR)			
	13.b.	Explain the key principles of the Diffuse Double Layer theory in soil science and discuss its significance		
4	14.a.	Critically assess the impact of soil sampling depth variability on the representativeness of collected samples.	K4	CO4
	(OR)			
	14.b.	Investigate the advancements in spectroscopic and imaging technologies for total nutrient analysis.		
5	15.a.	Explain briefly about the soil resistance, resilience and erosion.	K4	CO5
	(OR)			
	15.b.	Compare the effectiveness of phytoremediation and bioremediation in addressing soil organic pollution.		

SECTION - C (30 Marks)

Answer ANY THREE questions

ALL questions carry EQUAL Marks (3 × 10 = 30)

Module No.	Question No.	Question	K Level	CO
1	16	Examine in detail the partition of elements during surficial geological process and how it is recycled.	K5	CO1
2	17	Assess the interaction and impact of industrial effluent containing heavy metals and acids on soil quality.	K5	CO2
3	18	Elaborate soil sodicity using Sodium Absorption Ratio (SAR). How does SAR affect soil structure and permeability?	K6	CO3
4	19	Evaluate the concepts of nutrient availability in soil	K5	CO4
5	20	Recommend the conservation techniques for preventing soil erosion.	K5	CO5

Z-Z-Z END