22ESP208N

PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)

MSc DEGREE EXAMINATION DECEMBER 2025
(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)

Question No.	Question	K Level	CO
1	The main control on mountain formation is: a) Wind action b) Plate tectonics c) Precipitation d) Solar radiation	K1	CO1
2	In terms of abundance, the most common element in Earth's crust is: a) Iron b) Oxygen c) Silicon d) Aluminium	K2	CO1
3	A major source of soil pollution from fertilizers is: a) Phosphates b) Nitrates c) Chlorides d) Sulphates	K1	CO2
4	Soil microorganisms play an important role in: a) Degradation of pesticides b) Soil erosion c) Mineral hardness d) Formation of rocks	K2	CO2
5	The diffuse double layer theory is used to explain: a) Soil permeability b) Behavior of soil colloids c) Soil texture classification d) Soil genesis	K1	CO3
6	Which soil nutrient is associated with chlorophyll synthesis? a) Nitrogen b) Phosphorus c) Sulphur d) Potassium	K2	CO3
7	The critical limit of plant nutrients in soils represents: a) The maximum nutrient storage capacity b) Threshold below which plant growth is limited c) The optimum range for soil fauna d) Soil's organic fraction	K1	CO3
8	A soil with high soluble salt concentration is known as: a) Lateritic soil b) Saline soil c) Alluvial soil d) Loamy soil	K2	CO3
9	Afforestation as a soil conservation technique helps in: a) Decreasing biodiversity b) Reducing soil erosion and increasing organic matter c) Increasing salinity d) Lowering groundwater recharge	K1	CO5
10	The remediation of toxic inorganic pollutants in soil can be effectively done by: a) Biodegradation b) Phytoremediation c) Composting d) Burning	K2	CO5

Cont...

SECTION - B (35 Marks)

Answer **ALL** questions

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

Question No.	Question	K Level	CO
11.a.	Explain the process of Earth's origin and primary geochemical differentiation.	K4	CO1
	(OR)		
11.b.	Discuss the formation of igneous and metamorphic rocks.	K6	
12.a.	Justify the role of soil ecosystem services on cycling of nutrients.	K5	CO2
	(OR)		
12.b.	Elaborate the role of climate in soil formation.	K6	
13.a.	Justify the importance of the physical properties of soil on plant growth.	K5	CO3
	(OR)		
13.b.	Explain diffuse double layer theory of soil colloids.	K5	
14.a.	Explain the procedure for soil sample collection and preservation.	K3	CO4
	(OR)		
14.b.	Examine the concept of nutrient availability and its measurement.	K4	
15.a.	Categorise the types and factors of soil degradation.	K4	CO5
	(OR)		
15.b.	Compare and contrast various methods of reclamation of salt-affected soils.	K4	

SECTION -C (30 Marks)

Answer **ANY THREE** questions

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

Question No.	Question	K Level	CO
16	Analyse in detail the geochemical classification of elements and discuss their partitioning during surficial processes.	K4	CO1
17	Critically analyse the importance of soils for plants, animals, and human society.	K6	CO2
18	Explain in detail the surface charge characteristics of soils and their significance.	K5	CO3
19	Describe the analytical procedures used for estimating available plant nutrients in soil.	K3	CO4
20	Assess the various land restoration techniques with examples.	K5	CO5

Z-Z-Z END