22ESP208N / 22ESP208

PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)

MSc DEGREE EXAMINATION MAY 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	Under ideal climatic conditions how many centimetres of soil is developed? a) One b) Two c) Three d) Four	K1	CO1
	2	What term is used to describe the gradual breakdown of rocks into smaller particles through physical or chemical processes? a) Erosion b) Weathering c) Leaching d) Sedimentation	K2	CO3
2	3	Which of the following is a secondary soil-forming factor? a) Parent material b) Climate c) Biota d) Time	K1	CO3
	4	What is the primary source of soil organic matter? a) Inorganic minerals b) Soil microorganisms c) Plant and animal residues d) Atmospheric gases	K2	CO2
3	5	Which process involves the movement of colloidal particles downward through the soil profile? a) Leaching b) Illuviation c) Eluviation d) Weathering	K1	CO3
	6	Which fertilizer produce acidity in soil? a) Ammonium sulfate b) Sodium nitrate c) Calcium ammonium nitrate d) Calcium nitrate	K2	CO2
4	7	The conversion factor for calculating P from P_2O_5 is a) P_2O_5 x 2.29 b) P x 0.44 c) P x 2.29 d) P_2O_5 x 0.44	K1	CO4
	8	Which method is commonly used to determine soil available phosphorus? a) Ion-selective electrode b) Mehlich-3 extraction c) Kjeldahl digestion d) Gravimetry	K2	CO4
5	9	The process of saltation is accountable for the extent of _____soil erosion. a) 15 to 25%. b) 25 to 50%. c) 50 to 75%. d) 75 to 90%.	K1	CO2
	10	Which chemical technique involves the addition of lime to acidic soils to raise the pH and improve nutrient availability? a) Gypsum application b) Fertilizer injection c) Liming d) Organic matter incorporation	K2	CO5

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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.	Examine the tectonic processes that lead to the formation of igneous rock.	K4	CO1
		(OR)		
	11.b.	Classify the elements in bulk earth and crust.		
2	12.a.	Explain plant-microbe interactions in soil formation and how these biotic processes shape soil structure?	K4	CO2
		(OR)		
	12.b.	Examine the role of industrial waste disposal methods contributing to soil pollution.		
3	13.a.	Determine how soil texture, water retention, and drainage relate. How do these physical qualities affect crop yield and agricultural system resilience?	K4	CO3
		(OR)		
	13.b.	Explain the role of nitrogen as macronutrient and its influence on growth for plants.		
4	14.a.	Outline the procedures involved in preparation and preservation of soil samples.	K4	CO4
		(OR)		
	14.b.	Critically evaluate the limitations and potential sources of error associated with traditional soil nutrient extraction methods.		
5	15.a.	Analyse the factors responsible for land degradation and productivity.	K4	CO5
		(OR)		
	15.b.	Compare any two physical and chemical techniques employed in soil remediation.		

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	Compare the formation of igneous and metamorphic rocks.	K5	CO1
2	17	Inspect the effects of mining, mineral extraction and urban development on soil quality.	K5	CO2
3	18	Examine soil nutrient availability and Cation Exchange Capacity (CEC). How does soil CEC affect nutrient retention and exchange?	K5	CO3
4	19	Inspect in detail about the total nutrient analysis of soil.	K5	CO4
5	20	Explain the different phytoremediation strategies used for soil conservation.	K5	CO5

Z-Z-Z END