

Enrollment No.....



## Faculty of Agriculture

## End Sem Examination May-2024

## AG3CO28 Problematic Soils &amp; Their Management

Programme: B.Sc. (Hons.) Branch/Specialisation: Agriculture

Duration: 3 Hrs.

Maximum Marks: 50

Note: All questions are compulsory. Internal choices, if any, are indicated. Answers of Q.1 (MCQs) should be written in full instead of only a, b, c or d. Assume suitable data if necessary. Notations and symbols have their usual meaning.

- Q.1 i. A vertical section of soil is called \_\_\_\_\_. **1**  
 (a) Soil Horizon (b) Soil Profile  
 (c) Soil Epipedon (d) Soil endopedon
- ii. Soil health is the \_\_\_\_\_. **1**  
 (a) Status of soil (b) Service of Soil  
 (c) Purity of soil (d) None of these
- iii. What is the pH of saline soil? **1**  
 (a) <8.5 (b) >8.5 (c) <7 (d) None of these
- iv. Reclamation of acid soils \_\_\_\_\_. **1**  
 (a) Magnesium (b) Lime  
 (c) Gypsum (d) None of these
- v. What is sodium adsorption ratio range for high sodicity hazard? **1**  
 (a) 0-10 (b) 10-18 (c) 18-26 (d) >26
- vi. NO<sub>3</sub> is present in excess amount in drinking water causes \_\_\_\_\_. **1**  
 (a) Minimata disease (b) Itai-Itai  
 (c) Blindness (d) Methamoglobinemia disease
- vii. Scale of base map of Aerial Photography \_\_\_\_\_. **1**  
 (a) 1:50,000 (b) 1:250,000 (c) 1:10,000 (d) 1:159000
- viii. Geospatial is the combination of- **1**  
 (a) Geographic + GIS (b) Geological + GIS  
 (c) Geographic +GPS (d) Geological +GPS
- ix. Multipurpose tree" is a term common to- **1**  
 (a) Forestry  
 (b) Silviculture  
 (c) Horti-silviculture  
 (d) Agro-forestry

[2]

- x. Which of them does not fix nitrogen in the soil? **1**  
 (a) Coconut palm  
 (b) Neem  
 (c) Moringa oleifera  
 (d) Gliricidia sepium
- Q.2 i. Define waste land. **1**  
 ii. Write down the characteristics of healthy soil. **2**  
 iii. Discuss the strategies for improving soil quality. Explain different soil quality indicators. **5**
- OR iv. Describe genesis of waste land with various types and reclamation of it. **5**
- Q.3 i. Define alkali soil. **1**  
 ii. Define waterlogged and compacted soil. **3**  
 iii. Explain different forms of soil acidity. Discuss the impact, causes, effect and management of soil acidity. **4**
- OR iv. Discuss the strategies of increasing crop production and productivity in problem soils. **4**
- Q.4 i. Write down about the criteria for evaluation of irrigation water. **2**  
 ii. Explain the utilization of saline water in agriculture. **6**
- OR iii. Explain sodium hazard and boron concentration with formula and different categories. **6**
- Q.5 i. Define remote sensing and its types. **2**  
 ii. Define soil survey with their types. **2**  
 iii. Discuss the relationship of soil map and frequency of field observations. **4**
- OR iv. Explain the applications of remote sensing in natural resource management. **4**
- Q.6 Attempt any two:  
 i. Define land capability. Describe the classification of land capability based on suitability and unsuitability. **4**  
 ii. Describe any four agro-ecological zones of India. **4**  
 iii. Define Bioremediation. Describe the steps that are involved in the phyto-remediation process. **4**

\*\*\*\*\*

## Marking Scheme

### AG3CO28- Problematic Soils and their Management

Q.1	i)	A vertical section of soil is called.....	1
	b)	Soil Profile	
	ii)	Soil health is the .....	1
	a)	Status of soil	
	iii)	What is the pH of saline soil?	1
	a)	<8.5	
	iv)	Reclamation of acid soils.....	1
	b)	Lime	
	v)	What is sodium adsorption ratio range for high sodicity hazard?	1
	c)	18-26	
	vi)	NO <sub>3</sub> is present in excess amount in drinking water causes.....	1
	d)	Methamoglobinemia disease	
	vii)	Scale of base map of Aerial Photography.....	1
	d)	1:159000	
	viii)	Geospatial is the combination of	1
	a)	Geographic + GIS	
	ix)	Multipurpose tree" is a term common to	1
	d)	Agro-forestry	
	x)	Which of them not fixing nitrogen in the soil?	1
	c)	Moringa oleifera	
Q.2	i.	Define waste land.	1
	ii.	Write down the characteristics of healthy soil.	2
	iii.	Discuss the strategies for improving soil quality.	2.5
OR		Explain different soil quality indicators.	2.5
	iv.	Define waste land.	1
		Briefly cover genesis of waste land with various types and reclamation of it.	4
Q.3	i.	Define Alkali Soil.	1
	ii.	Define waterlogged	1.5
		Define compacted soil.	1.5
	iii.	Explain different forms of soil acidity.	2
OR		Discuss the impact, causes, effect and management of soil acidity.	2
	iv.	Discuss the strategies of increasing crop production and productivity in problem soils.	4

Q.4	i.	Write down about the criteria for evaluation of irrigation water	2
	ii.	Explain the utilization of saline water in Agriculture.	6
OR	iii.	Explain Sodium hazard and Boron concentration with formula and different categories	6
Q.5	i.	Define remote sensing	1
		Remote sensing types	1
	ii.	Define Soil Survey	1
		Soil Survey types	1
OR	iii.	Discuss the relationship of Soil Map and frequency of field observations.	4
	iv.	Explain the applications of remote sensing in natural resource management	4
Q.6	i.	Define land capability.	1
		Describe the classification of land capability based on suitability and unsuitability.	3
	ii.	Describe any four agro-ecological zones of India.	4
	iii.	Define Bioremediation.	1
		Describe the steps that are involved in the phyto-remediation process	3

\*\*\*\*\*