Total No. of Questions: 6 *Total No. of Printed Pages:3*

Enrollment No.....

Faculty of Agriculture

End Sem Examination Dec-2023

AG3CO35

Manures, Fertilizers & Soil Fertility 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. Farm Yard Manure is _____. **1**

(a) Green Manure

(b) Bulky organic manure

(c) Concentrated organic manure

(d) None of these

ii. Addition of organic manures in soil is enhanced the _____. **1**

(a) Physical properties (b) Chemical properties

(c) Biological properties (d) All of these

iii. Sulphur content in Single Super Phosphate fertilizer is- **1**

(a) 16 % (b) 12% (c) 21% (d) 46%

iv. Lime and gypsum are used as- **1**

(a) Nitrogenous fertilizers (b) Phosphatic fertilizers

(c) Micronutrient fertilizers (d) Soil amendments

v. Criteria of essentiality of nutrients was given by- **1**

(a) Nicolas (b) Arnon & Stout

(c) Lipmen & Stout (d) Lipmen & Nicolas

vi. Stomata opening and closing is regulating by which element- **1**

(a) Nitrogen (b) Phosphorous

(c) Potassium (d) Sulphur

vii. Nitrogen is absorbed by paddy in the form of _____. **1**
(a) NO_3^- (b) NH_4^+ (c) NO_2^- (d) N_2

viii. The critical limit of Mn in soil is- **1**
(a) 4.5 mg kg^{-1} (b) 2.0 mg kg^{-1}
(c) 0.6 mg kg^{-1} (d) 0.2 mg kg^{-1}

ix. Indicator plant for Zn micronutrient is- **1**
(a) Maize and Paddy (b) Wheat
(c) Sorghum (d) Mustard

x. The use efficiency of phosphorous nutrients in the soil is- **1**
(a) 30 – 50 % (b) 1 – 2 % (c) 15 – 20 % (d) More than 70 %

Q.2 i. Define organic manuring. **1**
ii. Write any four advantages of green manuring. **2**
iii. Write difference between bulky and concentrated organic manure with suitable examples. **5**
OR iv. Discuss the component and importance of integrated nutrient management in agriculture. **5**

Q.3 i. Define complex fertilizers with example. **1**
ii. Write name of any three nitrogenous fertilizers with their N content values. **3**
OR iii. Write short notes on: **4**
(a) Soil amendments
(b) Fertilizer storage
iv. What is nano fertilizers? Write the advantages of nano fertilizers. **4**

Q.4 i. Describe the mechanism of nutrient uptake by plants. **2**
ii. Classify the essential nutrients based on quantity required by plant. What are criteria of essentiality of elements? **6**
OR iii. Describe the key functions of major nutrients (N, P & K). **6**

Q.5 i. Write the main purpose of soil fertility evaluation? **2**
ii. What is the fate of nitrogen in soil? **2**
iii. How phosphorous become unavailable at acidic and saline soils. Explain with reaction. **4**

OR iv. Write the critical limits of major and micro nutrients in soil. **4**

Q.6 Attempt any two:
i. Define plant tissue testing and write its objective. **4**
ii. Write soil test based fertilizer recommendation. **4**
iii. Write the factors affecting the Nitrogen Use Efficiency. **4**

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Marking Scheme
AG3CO35 -Manures, Fertilizers and Soil FertilityManagement

Q.1	i.	Farm Yard Manure is …….. (b) Bulky organic manure		**1**
	ii.	Addition of organic manures in soil is enhanced the ------- (d) All of the above		**1**
	iii.	Sulphur content in Single Super Phosphate fertilizer is (b) 12%		**1**
	iv.	Lime and gypsum are used as (d) Soil amendments		**1**
	v.	Criteria of essentiality of nutrients was given by (b) Arnon & Stout		**1**
	vi.	Stomata opening and closing is regulating by which element (c) Potassium		**1**
	vii.	Nitrogen is absorbed by paddy in the form of …… (b) NH_4^+		**1**
	viii.	The critical limit of Mn in soil is (b) 2.0 mg kg^{-1}		**1**
	ix.	Indicator plant for Zn micronutrient is (a) Maize and Paddy		**1**
	x.	The use efficiency of phosphorous nutrients in the soil is (c) 15 – 20 %		**1**

Q.2	i.	Define organic manuring.	1 Mark	**1**
	ii.	Four advantages of green manuring.	(0.5 mark*4)	**2**
	iii.	Four difference	4 Marks	**5**
		Examples of bulky and concentrated	1 Marks	
OR	iv.	Component of INM	2 Marks	**5**
		Importance of INM	3 Marks	
Q.3	i.	Define complex fertilizers with example	1 Mark	**1**
	ii.	Three nitrogenous fertilizers	(1 Mark *3)	**3**
	iii.	(a) Soil amendments	2 Marks	**4**
		(b) Fertilizer storage	2 Marks	
OR	iv.	What is nano fertilizers	2 Marks	**4**
		Advantages of nano fertilizers.	2 Marks	
Q.4	i.	Passive mechanisms	1 Mark	**2**
		Active mechanisms	1 Mark	
	ii.	Essential nutrients based on quantity.	3 Marks	**6**
		Criteria of essentiality of elements	3 Marks	
OR	iii.	Two important functions of N	2 Marks	**6**
		Two important functions of P	2 Marks	
		Two important functions of K	2 Marks	
Q.5	i.	Main purpose of soil fertility evaluation	(As per explanation)	**2**
	ii.	Fate of nitrogen in soil	(As per explanation) 2 mark	**2**
	iii.	In acidic soils	2 Marks	**4**
		In saline soils	2 Marks	
OR	iv.	Critical limits of major nutrients	2 Marks	**4**
		Critical limits of micro nutrients	2 Marks	
Q.6		Attempt any two:		
	i.	Definition	1 Marks	**4**
		Objectives of plant tissue testing	3 Marks	
	ii.	Soil test based fertilizer recommendation.	(As per explanation)	**4**
	iii.	At least four factors of nitrogen use efficiency	(1 Mark*4)	**4**

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