MAHARASHTRA AGRICULTURAL UNIVERSITIES EXAMINATION BOARD, PUNE
SEMESTER END EXAMINATION

B.Sc. (Hons.) Agriculture

Semester	**: V (New)**	**Term**	**: I**	**Academic Year**	**: 2019-20**
Course No.	**: SSAC 353**	**Title**	**: Manures, Fertilizers and Soil Fertility Management**		
Credits	**: 3 (2+1)**				
Day & Date	**: Friday, 08.11.2019**	**Time**	**: 14.00 to 17.00**	**Total Marks**	**: 80**

Note : 1. Solve **ANY EIGHT** questions from **SECTION "A".**
2. All questions from **SECTION "B"** are compulsory.
3. All questions carry equal marks.
4. Draw neat diagrams wherever necessary.

SECTION "A"

Q.1 a) State Arnon's Criteria of essentiality of nutrients. Classify the essential nutrients with the forms in which they are absorbed by plants.
b) What is organic recycling? Give the chemical composition of undecomposed organic matter.

Q.2 a) Define and classify bulky and concentrated organic manures with one example each.
b) Define composting. Explain in detail Bangalore method of composting.

Q.3. a) Define green manuring. Explain decomposition of green manuring in soil.
b) Write down in detail about sewage and sludge along with their composition.

Q.4 a) Define complex fertilizers. Write down the characteristics of complex fertilizer.
b) Define fertilizers. Classify nitrogenous fertilizers with suitable examples.

Q.5 a) What is Integrated Nutrient Management? Enlist advantages of INM.
b) Explain the mechanism of transport of ions from soil to roots.

Q.6 a) Describe in detail nitrogen fixation in soil.
b) Write in brief the reactions of micro-nutrients in soil.

Q.7 a) What is meant by soil fertility evaluation? Enlist the methods of Soil fertility evaluation.
b) Give sources of phosphorus to soil and describe phosphorus fixation in soil.

Q.8 a) Enlist different approaches for plant analysis and describe in detail DRIS.
b) Discuss about losses during handling and storage of fertilizers.

Q.9 a) Define Soil Fertility. What are the advantages of soil testing and state various approaches for fertilizer recommendations on the basis of soil test.
b) Define nutrient use efficiency and explain factors influencing it.

Q.10 Write short notes (Any Two) :
a) C:N ratio
b) Potassium fixation in soil
c) Vermicompost

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SECTION "B"

Q.11 Select the appropriate word and rewrite.

1) Ammonium sulphate is ammonical fertilizer / amide fertilizer.

2) Chemical formula for citrate soluble phosphate is Ca (H_2PO_4)/Ca_3 (PO_4)$_2$/$CaHPO_4$.

3) Deficiency of iron is common in acidic/calcareous soils.

4) C:N ratio of saw dust is narrow/wide.

5) Rhizobia are symbiotic/non-symbiotic bacteria.

6) K_2O content in biogas slurry is 1.1 to 2.0 % / 0.8 to 1.2 %.

7) Soil test indicates the soil productivity / soil fertility.

8) Toxicity of calcium may lead to iron chlorosis/interveinal yellowing.

Q.12 Match the following pairs.

'A'	'B'
1) Wheat straw	a) Conc. Org. Manure
2) Boron	b) 56% K_2O
3) Ammonium Sulphate	c) Dhaincha
4) Muriate of potash	d) Groundnut
5) *In situ* green manuring	e) Tourmaline
6) Basic slag	f) 80 -100:1
7) Edible oil cake	g) Citric acid soluble
8) Poultry meal	h) 20%N

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