



**THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED**

**Q.1. Answer the following short questions: (15x2=30)**

1. Differentiate between humus and organic matter.
2. What is nutrient pollution?
3. Define Phytoremediation.
4. Why do plants die if they get too much fertilizer?
5. What is hydroponics?
6. Define lyotropic series.
7. What is Nutrient use efficiency?
8. Define ecotype.
9. Using water potential terminology, explain why: over-fertilizing your lawn will cause the leaves wilt, to become dry and fall off.
10. Differentiate between essential and beneficial elements.
11. A farmer is trying to grow corn but has difficulty getting access to water for irrigation. her region gets a lot of rain in the spring, so when she plants the seeds the soil is nice and moist, but no rain falls during the summer when the plants are growing. for the past few years, she has managed to grow tall, healthy looking plants, but although they flower, they set few seeds. what advice can you give this farmer to help her get a good grain harvest next year?
12. Which of the following nutrients would likely get flushed or leached out of the surface soil the fastest after a large rainstorm? what is its major reason?
13. If the upper, young leaves are showing a nutrient deficiency, which type of nutrient is most likely to be deficient in terms of its mobility?
14. Define mobile and immobile mineral elements.
15. Give chemical composition of macro and micronutrients of Hoagland nutrient solution.

**Q.2. Answer the following questions. (3x10=30)**

1. What is soil fertility evaluation? Briefly discuss various approaches employed to determine soil fertility status. (10)
2. What are various forms of soil k? What factors affect the k availability along with various organic and inorganic k fertilizers? (10)
3. Give a detailed account of physiology of symbiotic nitrogen fixation. (10)