



Fourth Semester B.E. Degree Examination, June/July 2023
Hydroponics, Aquaponics and Aeroponics

Time: 1 hr.]

[Max. Marks: 50

INSTRUCTIONS TO THE CANDIDATES

1. Answer all the **fifty** questions, each question carries one mark.
2. Use only **Black ball point pen** for writing / darkening the circles.
3. **For each question, after selecting your answer, darken the appropriate circle corresponding to the same question number on the OMR sheet.**
4. Darkening two circles for the same question makes the answer invalid.
5. **Damaging/overwriting, using whiteners** on the **OMR** sheets are strictly prohibited.

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1. What is aquaponics?
a) Growing plants in water without soil.
b) Combining hydroponics with fish farming (aquaculture)
c) Cultivating plants in a traditional soil-based system
d) Utilizing artificial lighting for plant growth
 2. In an aquaponic system, what is the role of fish?
a) Produces oxygen for the plants.
b) Producing oxygen and nutrients for the plants through their waste
c) Acting as pollinators for flowering crops
d) Resulting the pH levels of the water
 3. What is the name given to the beneficial bacteria that convert fish waste into plant nutrients in aquaponics?
a) Aerobes b) Decomposers c) Nitrifiers d) Herbivores
 4. Which of the following components is **NOT** essential in an aquaponic system?
a) Fish tank b) Grow bed for plants
c) Pesticides for pest control d) water pump
 5. Which nutrient is primarily responsible for promoting plant growth in aquaponics?
a) Phosphorus b) Nitrogen c) Potassium d) Magnesium
 6. What is the main advantage of aquaponics over traditional forming methods?
a) Lower start up costs
b) Higher fish yields
c) Elimination of the need for water circulation
d) Recirculating and conserving water

7. Which type of fish is commonly used in aquaponics due to its Rapid growth and adaptability?
a) Gold fish b) Betta fish c) Tilapia d) Koi carp
8. Aquaponics is considered a sustainable farming practice because it.
a) Requires the use of chemical fertilizer
b) Eliminates the need for water testing
c) Recycles fish waste as a nutrient source for plants
d) Involves the use of synthetic pesticides
9. What is the purpose of the biofilter in an aquaponic system?
a) To maintain a stable water temperature b) To filter out solid waste from fish tank
c) To oxygenate the water for the fish d) To convert harmful ammonia into nitrates
10. Which plant types are best suited for aquaponics systems?
a) Root vegetables with deep tap roots b) Cactus and Succulants
c) Leafy greens and herbs d) Plants that require acidic soil
11. What is hydroponics?
a) Cultivating plants in soil b) Growing plants in water without soil
c) Planting crops in sand d) Gardening using organic compost
12. Which of the following is not a benefit of hydroponics?
a) Increased plant growth rate b) Reduced water usage
c) Lower nutrient absorption by plants d) Year round crop protection
13. Which nutrient is commonly provided in hydroponic systems to promote plant growth?
a) Nitrogen b) Oxygen c) Carbon dioxide d) Sunlight
14. Which hydroponic system uses a nutrient solution that constantly flows over the plant roots?
a) Deep Water Culture (DWC) b) Ebb and flow
c) Drip Irrigation d) Nutrient Film Technique (NFT)
15. In a Deep Water Culture (DWC) system, plant roots are submerged in the nutrient solution, and the oxygen is provided through.
a) An air pump b) Sunlight c) Nutrient absorption d) Evaporation
16. The pH level of the nutrient solution in hydroponic system should ideally be,
a) Slightly acidic (pH5-6) b) Highly acidic (pH1-2)
c) Neutral pH (7) d) Alkaline (pH9-10)
17. Which is the primary reason for using a growing medium in hydroponics?
a) To provide structural support to the plants
b) To control the pH level of the nutrient solution
c) To replace the need for nutrients
d) To improve water drainage
18. Which hydroponic system involves growing plants in a static, non circulating nutrient solution?
a) Nutrient Film Technique (NFT) b) Deep Water Culture (DWC)
c) Ebb and Flow (Flood and Drain) d) Kratky method

19. Hydroponics is most suitable for growing,
- Large trees and Shrubs
 - Leafy greens and herbs
 - Plants with deep taproots
 - Desert-adapted succulents
20. In hydroponics, what do farmers need to monitor and control to ensure proper plant growth?
- Soil quality
 - Sunlight exposure
 - Humidity levels
 - Nutrient solution
21. What is aeroponics?
- Growing plants in water without soil.
 - Combining hydroponics with fish farming (aquaponics)
 - Cultivating plants in air with their roots misted with nutrient solution
 - Utilizing natural light for plant growth without artificial lighting
22. In aeroponics, how are plants roots exposed to nutrients and oxygen?
- Submerged in a nutrient solution
 - Covered with a layer of soil
 - Suspended in air and mist with nutrient solution
 - Attached to the fish in an aquaponic system
23. Which of the following is a significant advantage of aeroponics over the growing methods :
- Reduced water usage
 - Simpler maintenance
 - Slower plant growth
 - Higher nutrient concentration
24. What is the purpose of the misting system in aeroponics?
- To cool down the plant roots
 - To prevent pest infrastructure
 - To provide misting system in aeroponics
 - To deliver nutrients to the roots
25. Which of the following is a potential challenge in aeroponics?
- Root rot due to excessive watering
 - Excessive use of soil
 - Fish waste accumulation
 - Over exposure to sunlight
26. How does aeroponics support plant growth and development?
- By limiting oxygen supply to the roots
 - By providing a nutrient rich substrate
 - By allowing the roots to access CO₂
 - By creating an ideal pH level in the root zone
27. Which type of plants generally thrive in aeroponic systems?
- Deep rooted trees and shrubs
 - Crops with large tap roots
 - Small fast growing herbs and leafy greens
 - Desert adapted succulants
28. What is the main advantage of using aeroponics in space exploration and research?
- Ability to simulate earth like soil conditions
 - Reduced need for artificial lighting
 - Space-Saving design for compact spacecraft
 - Efficient nutrient delivery to plants in micro gravity

29. In aeroponics, how is the nutrient solution delivered to the plant roots?
- Through a continuous flow system
 - Through periodic flooding and draining
 - By misting the roots with a nutrient solution
 - By manually watering the plants from the top
30. Which of the following is a common technique to moists the health of plants roots in an aeroponic system?
- Measuring leaf color
 - Checking the pH level of the nutrient
 - Examining the shape of the leaves
 - Observing the density of the mist around the roots
31. What is aquaponics?
- Growing plants in water without Soil
 - Combining hydroponics with fish farming (aquaculture)
 - Cultivating plants through their waste.
 - Utilizing artificial lighting for plant growth
32. In an aquaponic system, what is the role of fish?
- Producing the oxygen for the plants
 - Providing nutrients for the plants through their waste
 - Acting as pollinators for flowering crops
 - regulating the pH level of the water
33. What is the name given to the beneficial bacteria that convert fish waste into plant nutrients in aquaponics?
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34. Which of the following components is NOT essential in an aquaponic system?
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 - Cactus succulants
 - Leafy greens and herbs
 - Plants that require acidic soil
41. Which of the following applications of hydroponics is common in space exploration and research?
- Commercial green house production
 - Vertical farming in urban areas
 - Aeroponics for leafy greens
 - Space farming
42. Hydroponics exclusively used in commercial green house production,
- Cultivate crops using only organic nutrients
 - Minimize the need for artificial lighting
 - Extend the growing season and increase yields
 - Avoid the use of controlled temperature and humidity
43. Which application of hydroponics involves grows crops in walls at vertically stacked trays?
- Aquaponics
 - Vertical farming
 - NFT system
 - Drip irrigation
44. In hydroponics-based research, which benefit is most significant compared to traditional soil based experiments.
- More challenging to control environmental factors
 - Faster plant growth and maturation
 - Higher chances of soil-borne diseases
 - Reduced nutrient absorption by plants
45. Hydroponics is especially beneficial in arid regions because it,
- Requires less water compared to traditional farming
 - Eliminates the need for artificial lighting
 - Supports the growth of deep-roots crops
 - Facilitates better nutrient uptake from the soil
46. Which of the following applications involves combining hydroponics with aquaculture?
- Aeroponics
 - Green house production
 - Verticle farming
 - Aquaponics
47. Hydroponics has gained popularity in urban area mainly because it,
- Requires large plots of land for cultivation
 - Produces crops with lower nutritional value
 - Allows year-round cultivation in limited spaces
 - Is more expensive than traditional farming method.

48. Which application of hydroponics is designed to create a mist like environment for plant roots?
- a) NFT system
 - b) Drip irrigation
 - c) Aeroponics
 - d) Ebb and flow system
49. Hydroponics can be used in educational setting to :
- a) Make students allergic to soil based farming methods.
 - b) Teach students about the importance of soil conservation
 - c) Demonstrate principles of plant growth
 - d) Promote the use of chemical fertical in agriculture
50. Which industry has adopted hydroponics for sustainable production and reduced environmental impact?
- a) Textile manufacturing
 - b) Mining and Minerals
 - c) Oil and gas exploration
 - d) Cannabis cultivation
