CBCS SCHEME

BBT456A

USN

Question Paper Version : C

Fourth Semester B.E./B.Tech. Degree Examination, June/July 2024
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. Which type of bacteria is crucial for converting fish waste into usable plant nutrients in aquaponics?
   a) Lactic acid bacteria b) Nitrosomonas
   c) Escherichia coli d) Lactobacillus

2. In an aquaponic system, what is the purpose of the sump tank?
   a) To house fish
   b) To provide additional nutrient storage
   c) To act as a central reservoir for water circulation
   d) To grow plants

3. Overfeeding fish in an aquaponic system can lead to,
   a) Reduced plant growth b) Increased oxygen levels
   c) Excessive ammonia production d) Enhanced nutrient uptake

4. What is the best medium for starting seeds in aquaponics?
   a) Sand b) Rockwool c) Clay d) Gravel

5. Which nutrient deficiency commonly affects plants in aquaponics?
   a) Nitrogen b) Calcium c) Potassium d) Magnesium

6. What is the role of light in seed germination?
   a) Providing nutrients b) Triggering growth process
   c) Supplying oxygen d) Maintaining moisture

7. What is the primary function of plant roots?
   a) Photosynthesis b) Nutrient absorption
   c) Reproduction d) Pollination

8. Which of the following helps maintain oxygen levels in the fish tank?
a) Water pump b) Air stone c) Heater d) Light

9. Which nutrient cycle is critical for fish health and plant growth?
a) Phosphorous cycle b) Carbon cycle
c) Nitrogen cycle d) Sulfur cycle

10. Pruning in aquaponics system helps to,
a) Increase water usage b) Encourage plant growth
c) Reduce plant yield d) Increase pest problems

11. Who is considered the father of hydroponics?
a) Aristotle b) John woodward c) Willian Frederick d) Charles Darwin

12. In _____ Century hydroponics became scientifically developed,
a) 16^{th} b) 18^{th} c) 20^{th} d) 21^{st}

13. _____ resemble modern hydroponics and was used in Hanging Gardens of Babylon.
a) Soil beads b) Water Channels c) Gravel d) Clay pots

14. "Hydroponics" means _____,
a) Water labor b) Water culture c) Soil less growth d) Plant science

15. _____ is not a hydroponic system.
a) Nutrient film technique b) Deep water culture
c) Ebb and flow d) Traditional soil cultivation

16. Hydroponic can contribute to food production by,
a) Increase farmland b) Limiting crop yield
c) Use more fertilizer d) The ability to control growing conditions

17. Organic farming primarily relies on :
a) Synthetic fertilizers b) Chemical pesticides
c) Natural processes and substances d) Genetically modified organisms

18. Certification for organic hydroponic produce,
a) is universally accepted b) Varies by country and certifying body
c) Is not possible d) Requires soil based growth

19. A common medium used in soilless culture :
a) Loam soil b) Coco coir c) Lime stone d) Clay

20. One key component of soilless culture systems :
a) Soil fertility b) Control of nutrient solutions
c) Dependency on weather d) Natural rainfall irrigation

21. One of the primary benefits of aeroponics over soil based methods is,
a) Increased need for Pesticides b) Faster growth rate and higher yields
c) Higher water consumption d) Reduced plant health

22. Which of these is a cost-effective advantage of aeroponics?
a) Reduced use of pesticides and herbicides
b) Higher labour costs
c) Increased need for manual laboring
d) Higher initial setup cost

23. Which of these is a key factor in efficiency of aeroponics systems?
a) Soil type
b) Light intensity
c) Nutrient mist frequency and duration
d) Plant species

24. Flow has LED impacted aeroponics systems.
a) Increased energy consumption
b) Reduced plant growth rates
c) Enhanced plant growth through controlled light spectra
d) made soil-based systems more effective

25. Cleaning and Sanitizing an aeroponics system helps to prevent,
a) Increased plant growth
b) Pest infestations
c) Nutrient deficiency
d) System malfunctions

26. What is the significant initial investment cost for starting an aeroponics business?
a) Soil preparation
b) Chemical fertilizer stock
c) High-tech equipment and system setup
d) Large land acquisition

27. Aeroponics can help in achieving :
a) Increased pesticide usage
b) Depletion of natural resources
c) Higher green house gas missions
d) Sustainable and resource-efficient agriculture

28. The root zone in an aeroponic system must be,
a) Constantly submerged in water
b) Kept dry
c) Kept in nutrient-rich mist environment
d) Buried in soil

29. What is common challenge of aeroponic business?
a) High labour costs
b) Low water usage
c) Market demand for soil grown produce
d) Initial capital investment for high tech systems

30. To prevent disease in aeroponics, it is crucial to,
a) Use high amounts of chemical fertilizers
b) Regularly clean and sterilize system components
c) Increase the humidity to high levels
d) Decrease nutrient concentrations.

31. What is a potential drawback of excessive CO_2 levels in greenhouse?
a) Reduced plant growth
b) Increased pest problems
c) Higher humidity levels
d) Increased plant toxicity

32. What is a common issue with overusing chemical pesticides?
a) Increased plant growth b) Pest resistance
c) Reduced pest populations d) Improved soil quality

33. Ethylene gas is associated with which pest-harvest process.
a) Photosynthesis b) Ripening
c) Respiration d) Dormancy

34. What is the main advantage of using hydroponics over soil based growing?
a) Increased water usage b) Easier pest control
c) Faster plant growth and higher yields d) Reduced nutrient requirements

35. PCR is used in plant diagnostics for,
a) Identifying genetic disorders
b) Measuring soil moisture
c) Analyzing nutrient content
d) Detecting plant pathogens

36. Practical hands on training in hydroponics typically involves,
a) Lecture-based learning only
b) Field visits to traditional forms
c) Setting up and maintaining a small hydroponic system
d) Studying hydroponic theory exclusively

37. Which type of hydroponic system is most commonly used in commercial greenhouses?
a) Wick system b) Eff ad flow system
c) Nutrient Film technique d) Aeroponics

38. Which of these is an example of a cultural control method in pest management?
a) Introducing natural predators b) Using insecticidal soap
c) Crop rotation d) Applying synthetic pesticides

39. Vacuum cooling is particularly effective for which type of produce?
a) Root vegetables b) Leafy greens c) Tree fruits d) Nuts

40. ELISA is commonly used for detecting,
a) Soil nutrients b) Plant harmones
c) Plant pathogens d) Light levels

41. The pH level for most hydroponic systems should be between :
a) 4.0 – 5.0 b) 5.5 – 6.5 c) 7.0 – 8.0 d) 8.5 – 9.5

42. Which of the following is a common growing medium in hydroponics?
a) Peatmoss b) Silt c) Clay loam d) Rockwool

43. Coco coir, used in hydroponics is derived from :
a) Coconut husks b) Pine bark c) Sea weed d) Saw dust

44. An essential micronutrient for plants is :
a) Potassium b) Phosphorous c) Iron d) Calcium

45. Which nutrient deficiency is known to cause chlorosis in plants?
a) Calcium b) Iron c) Sulfur d) Phosphorous

46. Which advanced nutrient is required for overall plant energy transfer?
a) Potassium b) Carbon c) Boron d) Zinc

47. A nitrogen deficiency in hydroponic plants typically results in,
a) Yellowing of older leaves b) Stunted root growth
c) Purple colouration of leaves d) Leaf curling

48. Magnesium deficiency in plants leads to,
a) Yellowing between leaf veins b) Browning of leaf edges
c) Leaf-tip necrosis d) Curling leaves

49. The hydroponic system known for suspending plant roots in air and misting them with nutrient solution is,
a) Wick system b) Eff and flow
c) Aeroponics d) Drip system

50. Hydroponic cropping can improve,
a) Soil fertility b) Water conservation
c) Dependency on pesticides d) Plant disease prevalence

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