

AGR/Q0808 - Hydroponics Technician

Review Date - 01/06/2025


Theory:

S No.	Question Text	Choice 1	Choice 2	Choice 3	Choice 4	Correct Choice
1	Which of the following is a fundamental aspect of communicating and behaving appropriately with all genders and Persons with Disabilities (PWD)?	Using derogatory language and offensive jokes to maintain a casual atmosphere	Avoiding interactions with individuals from different genders or PwD to prevent misunderstandings	Treating everyone with respect, dignity, and inclusivity, irrespective of their gender or abilities	Stereotyping and making assumptions based on gender or disability	Choice 3
2	Regularly updating and securing passwords for financial accounts is an essential consideration when carrying out offline and online financial transactions	TRUE	FALSE			Choice 1
3	Which of the following crops/plants are suitable for hydroponics farming?	Lettuce, spinach, and tomatoes	Wheat, corn, and rice	Potatoes, carrots, and onions	Apples, oranges, and grapes	Choice 1
4	You are managing a hydroponics farm that has been facing significant damage from birds and animals that feed on the crops. The farm is located in an open field without any natural barriers or structures nearby. Which of the following methods is the most effective for preventing birds and animals from preying on hydroponics plants/crops?	Using visual deterrents like decoy predators or eyespot balloons	Implementing motion-activated sprinklers to startle animals	Playing recorded predator sounds to deter pests	Employing a combination of netting, fencing, and reflective tape	Choice 4
5	You are planning to start a hydroponics farm and are looking for the most suitable location. Your goal is to maximize crop yield and minimize environmental challenges. The farm will use a soilless cultivation system with controlled nutrient solutions. The crops will be grown in a greenhouse or indoor environment. Which of the following sites is most suitable for hydroponics farming?	Mountainous region with heavy rainfall	Coastal area with high salinity levels	Desert region with limited water availability	Temperate region with moderate temperatures and access to freshwater	Choice 4

6	What is the recommended method for preparing the nutrient solution while maintaining the appropriate ratio of water, nutrients, and hormones required for the growth of selected plants in hydroponics farming?	Diluting commercially available hydroponic nutrient solutions with water	Following a specific nutrient formula tailored to the plant species and growth stage	Mixing fertilizers, such as nitrogen, phosphorus, and potassium, in equal proportions with water	Adding plant growth hormones directly to water without additional nutrients	Choice 2
7	Which of the following practices is the practice of growing plants in an air or mist environment without the use of any substrate?	Aeroponics	Agroforestry	Mixed farming	Hydrponic Farming	Choice 1
8	You are managing an aeroponic farm and are focused on maximizing resource efficiency while maintaining optimal plant growth. The farm is located in an area with limited access to water and electricity, and sustainability is a key consideration for your operations. Which of the following practices can optimize the usage of water, electricity, and other resources in aeroponic farming?	Neglecting regular maintenance and cleaning of the aeroponic system	Using high-intensity lighting throughout the entire growth cycle	Implementing a recirculating system for nutrient solution and water	Running the aeroponic system continuously without any breaks	Choice 3
9	Match the following categories of waste along with their examples, which are generated during hydroponic farming.	1A, 2C, 3D, 4B	1A, 2C, 3D, 4B	1B, 2A, 3D, 4C	1D, 2C, 3B, 4A	Choice 2

1. Bio-degradable Waste	A. Unused or expired chemical nutrient solution
2. Non-biodegradable Waste	B. Pesticide containers
3. Hazardous Waste	C. Plant material waste
4. Chemical Waste	D. Plastic containers, trays, wrappers

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10	<p>State TRUE/FALSE: The below given image is of lettuce plant growing in an aeroponic farm, which is ready to be harvested.</p> 	TRUE	FALSE			Choice 1
11	<p>What is the recommended treatment according to recognized first aid techniques for treating burns?</p>	Apply butter or oil to the burn to soothe the pain	Rinse the burned area with cool running water for several minutes	Apply ice directly to the burned area	Pop any blisters that may have formed on the burn	Choice 2
12	<p>You are working in a hydroponics farm when news breaks out about a contagious disease outbreak in the region. What is the recommended course of action according to government/workplace advisories in case of an outbreak of any disease while working in a hydroponics farm?</p>	Continue working as usual, following standard operating procedures	Immediately evacuate the farm and seek shelter in a safe location	Follow hygiene protocols, practice social distancing, and wear personal protective equipment (PPE)	Disregard advisories and rely on personal judgment for safety measures	Choice 4

Practical and Viva:

S No.	Question Type	Question Text	Suggestion Solution	Equipment Required
1	Practical	Demonstrate the proper technique for harvesting a hydroponic lettuce plant.	<ol style="list-style-type: none"> Checked the lettuce plant for signs of maturity. Looked for fully developed leaves, a vibrant green color, and a crisp texture. Generally, lettuce is ready for harvest when it reaches a height of 4-6 inches (10-15 cm). 	Scissors or sharp knife, Paper towel, Clean container or bag, Water source

			<ol style="list-style-type: none"> 2. Before harvesting, ensured he/she has clean, sanitized harvesting tools such as scissors or a sharp knife. Also, has a clean container or bag ready to collect the harvested lettuce. 3. Chose the outer leaves to harvest while allowing the inner leaves to continue growing. This practice is known as selective harvesting and ensures a continuous supply of fresh lettuce leaves. Started by cutting or snipping the outer leaves near the base of the plant, leaving the inner leaves intact. 4. Handled the harvested lettuce leaves with care to prevent bruising or damage. Avoided excessive squeezing or rough handling, as it can affect the quality and appearance of the leaves. 5. Rinsed them gently under cool, running water to remove any dirt or debris. Allowed the leaves to drain briefly to remove excess moisture. 6. Stored the harvested lettuce leaves in a clean, airtight container or bag lined with a paper towel. Placed the container in the refrigerator at a temperature of around 32-40°F (0-4°C) to maintain freshness. 	
2	Viva	<p>When selecting crops or plants for hydroponics farming, what factors should be considered to determine their suitability?</p>	<ol style="list-style-type: none"> 1. Nutrient requirements: Different crops have varying nutrient needs. It is crucial to select plants that can thrive with the available hydroponic nutrient solutions and can efficiently uptake nutrients through their root systems. 2. Growth habits: Plants with compact growth habits, such as leafy greens or herbs, are generally well-suited for hydroponics. Their ability to grow vertically and in dense arrangements maximizes space utilization in the system. 3. Water requirements: Plants that have lower water requirements or are drought-tolerant are more suitable for hydroponics. This ensures efficient water usage and reduces the risk of overwatering or waterlogging in the system. 4. Disease and pest resistance: Choosing crops that are known for their resistance to common diseases and pests can minimize the need for pesticide usage in hydroponics, promoting healthier plants and reducing environmental impact. 5. Growth cycle and time to maturity: Considering the growth cycle and time to maturity is essential for planning crop rotations and optimizing the production cycle. Fast-growing 	

			<p>crops with shorter maturity periods can result in higher yields and more frequent harvests.</p> <p>6. Market demand and profitability: Evaluating the market demand and profitability of specific crops is important for commercial hydroponics operations. Selecting crops that have high demand and good market value can ensure a sustainable and profitable venture.</p>	
3	Viva	<p>How can you maintain the recommended temperature and humidity in the root chamber for the optimum growth of plants in hydroponics?</p>	<ol style="list-style-type: none"> 1. Temperature control: Implementing a temperature control system, such as heaters, coolers, or air conditioners, allows for precise regulation of the root chamber temperature. Monitoring the temperature regularly and adjusting the control system accordingly helps maintain the optimal range for plant growth. 2. Insulation: Proper insulation of the root chamber helps to retain the desired temperature and reduce heat or cold loss. Using insulating materials such as foam panels or reflective films can prevent temperature fluctuations caused by external factors. 3. Ventilation: Ensuring adequate air circulation in the root chamber is crucial for temperature and humidity control. Installing fans or ventilation systems helps regulate the airflow, preventing the accumulation of excess heat or moisture. This promotes a stable environment for plant growth. 4. Humidity management: To maintain the recommended humidity levels, using humidifiers or dehumidifiers can be beneficial. Humidifiers add moisture to the air when humidity is too low, while dehumidifiers extract excess moisture when humidity is too high. Regular monitoring of humidity levels and adjusting the equipment accordingly is essential. 5. Monitoring and automation: Utilizing environmental monitoring systems, such as sensors and controllers, allows for real-time monitoring of temperature and humidity. Automation systems can adjust environmental conditions 	

			<p>automatically based on predefined parameters, ensuring optimal conditions for plant growth.</p> <p>6. Shade control: Regulating the amount of light reaching the root chamber helps manage temperature and humidity. Using shade cloth or adjusting artificial lighting intensity reduces heat buildup and controls the evaporation rate, thus affecting humidity levels.</p>	
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