

Advanced Aquaculture Science

Aquaculture · Answer Key · 15 Questions

1. In Recirculating Aquaculture Systems (RAS), which process is primarily responsible for the conversion of toxic ammonia into less harmful nitrate?

- A) Denitrification
- B) Nitrification**
- C) Photo-oxidation
- D) Chemosynthesis

2. What is the primary function of a 'protein skimmer' or foam fractionator in a saltwater aquaculture system?

- A) Removal of dissolved organic compounds**
- B) Oxygenation of the water column
- C) Reduction of water temperature
- D) Sterilization of pathogenic bacteria

3. Which term describes the phenomenon where nitrogen gas concentrations in water exceed atmospheric pressure, potentially causing gas bubble disease in fish?

- A) Hypoxia
- B) Hypercapnia
- C) Supersaturation**
- D) Eutrophication

4. In salmonid aquaculture, what is the specific term for the physiological transition where a parr undergoes hormonal and morphological changes to survive in seawater?

- A) Metamorphosis
- B) Smoltification**
- C) Estivation
- D) Gametogenesis

5. Which of the following describes the 'Feed Conversion Ratio' (FCR) calculation in aquaculture?

- A) Total weight gained divided by total feed fed
- B) Total feed fed divided by total weight gained**
- C) Total fish harvested minus mortality rate
- D) Total protein intake divided by total water volume

6. What is the limiting factor in most intensive pond aquaculture systems that necessitates mechanical aeration?

- A) Dissolved oxygen levels**
- B) Carbon dioxide concentration
- C) Total suspended solids
- D) Nitrogen gas pressure

7. In molluscan aquaculture, what is the primary cause of 'spat' mortality during the nursery phase?

- A) Viral hemorrhagic septicemia
- B) Vibrio bacteria infections**
- C) Thermal shock from solar radiation
- D) Excessive silicate concentration

8. What is the purpose of 'triploidy' induction in commercial oyster farming?

- A) To increase the growth rate by inhibiting sexual maturation**
- B) To change the shell color for market appeal
- C) To increase resistance to ocean acidification
- D) To improve the nutritional content of the mantle

9. Which chemical parameter must be monitored to ensure the efficacy of biological filters in a RAS environment?

- A) Alkalinity**
- B) Salinity
- C) Turbidity
- D) Conductivity

10. In aquatic pathology, what does the term 'ELISA' refer to as a diagnostic tool?

- A) Enzyme-Linked Immunosorbent Assay**
- B) Electrolytic Liquid Ion Sampling Apparatus
- C) Endogenous Larval Infectious Symptom Analysis
- D) External Lesion Identification Scanning Array

11. Which type of aquaculture system utilizes integrated nutrient recycling where fish waste provides fertilizer for hydroponic crops?

- A) Pond monoculture
- B) Aquaponics**
- C) Cage culture
- D) Raceway system

12. Which gas, if present in high concentrations in recirculating water, acts as a potent anesthetic and can suppress fish growth?

A) Carbon dioxide

- B) Argon
- C) Neon
- D) Helium

13. What is the role of 'zooplankton' in the larval rearing of marine fish species?

A) They act as a primary source of essential fatty acids for larvae

- B) They are used to filter bacteria from the water column
- C) They provide structural support for the larval development
- D) They act as a biological control for fungal infections

14. Which of the following is considered an 'allochthonous' input in an intensive aquaculture pond ecosystem?

A) Phytoplankton growth

B) External commercial pelleted feed

- C) Decomposition of benthic algae
- D) Photosynthetic oxygen production

15. In the context of aquaculture sustainability, what does the 'Fish In-Fish Out' (FIFO) ratio measure?

A) The mass of wild-caught fish used in feed vs the mass of farmed fish produced

- B) The number of fish eggs placed in a hatchery vs the number of fingerlings
- C) The total number of fish in a cage vs the water volume
- D) The ratio of male to female fish in a breeding program