

المستوي الثالث - علوم البحار البيولوجية
استزراع مائي (318 ع ب)

Date: 6 /6 /2024

Time: 2 Hours

Mark: 90

الإمتحان في 2 صفحات:

Question One:

(26 marks)

A- Identify the following items:-

(8 marks)

1. Feed Conversion Ratio
2. Fry and Juveniles.
3. Ontogeny.
4. Rotifers Parthenogenesis.

B- comment on the following statements:

(18 marks)

- 1- For the first fish larvae feeding, the live food is better than the formulated diet
- 2- There are many advantages and disadvantages of various algal culture techniques.
- 3- Microalgae have a central role in mariculture.
- 4- The fish farmers naturally turn from natural resources to obtain their stock.
- 5- The protocols used for the rearing of gilthead seabream and seabass larvae are different.
- 6- There are five phases in algae growth dynamics.

Question two:

(16 marks)

Put ✓ or × and correct the false

- 1- In Egypt, the carp fish is the most targeted fish for farming
- 2- In tropical aquaculture, the SS-type rotifers are preferred for the first feeding of fish larvae with small mouth openings of less than 200 µm.
- 3- By 2020, all fish farmers in Egypt have turned to hatcheries to obtain seeds
- 4- *Tetraselmis* and *Nannochloropsis* have the same percentages of DHA content.
- 5- In nature, there is very high mortality at fry and larvae stages
- 6- *Artemia* can only survive at very high salinity.
- 7- Recently, the feeding of sensitive first-feeding larvae has become very easy in the aquaculture industry.
- 8- The resting eggs in rotifers can be the result of changes in environmental conditions.
- 9- The reproduction activity of *Brachionus* depends on the water temperature.
- 10- Most algae species grow best at a lower temperature (16°C) and salinity that is slightly lower than that of their native habitat.
- 11- Combinations of flagellates and diatoms provide a well-balanced diet which will generally accelerate the rate of Mollusca larvae development to metamorphosis in comparison with unialgal diets.
- 12- *Artemia* is a selective filter feeder of organic detritus and bacteria.
- 13- The content of highly unsaturated fatty acids (HUFA), is of major importance in the evaluation of the nutritional composition of an algal species to be used as food for marine organisms.
- 14- Without disinfection, the *Artemia* cysts hatching will reduce.
- 15- USA is the largest aquaculture-producing country in the world

16- The shrimp's larvae' feedings changes from herbivorous to carnivorous during the nauplius stage

Question three:

(23 marks)

Complete the missing parts:

- Many obstacles must be overcome for the successful production of fish such as ... (1).....(2)....
- Artemia physiological adaptations to high salinity could be attributed to(3)....
- The choice of the optimal culture temperature for rearing rotifers depends on the(4)....
- Most fish larvae will have to rely on a food source that ... (5).....(6).....(7)....
- Criteria for choosing the right algal species are ... (8).....(9).....(10)....
- To use the algae as food in mariculture, you should harvest your algae mass culture in(11).... Phase.
- The most common sources of contamination during algae culture include(12)....., the air, the culture vessel, and the(13)....
- From the advantages of using Artemia as live food(14)....and....(15)....
- Microalgae are used directly in the larval tanks (green water technique), where they play a role in ... (16).....(17).....(18)....
- Feeding fish larvae with an artificial diet involves a series of changes in the rearing environment such as(20)..... and(21).....
- They are the main causes for lower reproduction which can eventually result in a complete crash of the rotifers population... (22)....and ... (23)....

Question four:

(25 marks)

Discuss the following statements:

- 1- There are some problems if one looks at the production of eggs, larvae, and fry that is carried out on the farm itself.
- 2- There are many criteria for the selection of fish larvae food sources.
- 3- The success of rotifers as a cultured organism is various.
- 4- Larvae mouth size is correlated with body size, which in turn is influenced by egg diameter and the period of endogenous feeding.
- 5- Techniques of (n-3) HUFA enrichment for rotifers are diverse.

With Best Wishes

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