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RAJARATA UNIVERSITY OF SRI LANKA
FACULTY OF APPLIED SCIENCES

B.Sc. (General) Degree in Applied Sciences
Third year – Semester II Examination – April/ May 2016

ZOO 3205 - BREEDING TECHNIQUES IN AQUACULTURE

Time : Two (02) hours

Answer four (04) questions including question No. 01.

1. Flowerhorn Cichlid is an expensive hybrid variety which is popular with Asian fish hobbyists. An ornamental fish farm owner intends to breed and culture flowerhorn cichlids in his farm for exportation. Write an essay to educate him on following aspects.

   a) Selection of brooders

   b) Setting up of breeding tanks

   c) Breeding strategies

   d) Post breeding care

2. A farmer has 25 brood stocks of common carps and he is planning to discard them. As an aquaculturist, explain him how to utilize them to induce the breeding of Indian carps, focusing on the following aspects.

   a) Suggest a suitable induced breeding technique

   b) Collection of the appropriate hormone and preservation

   c) Preparation of hormone extraction

3. An exported fish variety was found to mature in the fish tanks but failed to breed when provided with hormone injections and optimum environmental conditions.

   a) Emphasizing the important steps, explain how to overcome the above mentioned situation adopting a suitable breeding strategy.

   b) If the fish has sticky eggs, describe how to remove the stickiness of eggs.

   c) State the advantages of the breeding strategy which is mentioned above.

4. a) If a fish breeder intends to use dried pituitary glands in a breeding program with 30 females and 15 males, using the given data calculate the required number of pituitary glands for the said breeding program.

(Average weight of a female - 5kg; two injections each – 1st : 2 mg/kg, 2nd : 6mg/kg;
Average weight of a male - 3kg; one injection each - 2mg/kg;
Average weight of pituitary gland : 2.5 mg)

b) Determine the amount of saline solution required for the preparation of each injection for the males and females, if the dosages required for females are 1st injection=1ml/fish, 2nd injection = 1.5ml/fish and for male 1 ml/fish.

c) If the recommended doses of ovuluin are 0.5 ml/kg for females and 0.3 ml/kg for males respectively for the same fish stock indicated in **(a)**, and if only a single dose of hormone is given to both the sexes, calculate the desired concentrations of ovuluin that should be given to females and males respectively (note that the desired volume of injection to be given is 1cc).

d) If you have 1mg vial of hormone and the recommended dosage is 1 µg/kg where fish weigh approximately 500g each and the desired volume of injection is 0.1cc, compute the desired concentration of the hormone.

e) Estimate the required volume of bacteriostatic water that should be mixed with 1mg vial to get the desired concentration.

5. Write short notes on any **three (03)** of the following;

a) assessment of maturity of fish

b) use of anesthetics to reduce stress in fish

c) extracellur and intracellular cryoprotectants

d) spawning methods of shrimps