RAJARATA UNIVERSITY OF SRI LANKA
FACULTY OF APPLIED SCIENCES

B.Sc. (General) Degree in Applied Sciences
Third Year - Semester II Examination –October/November 2017

ZOO 3205 - BREEDING TECHNIQUES IN AQUACULTURE

Time: Two (02) hours

Answer any four (04) of the following questions.

1. a) State the **two (02)** types of induced spawning methods that are used in fish breeding. **(05 marks)**

   b) Using a female reproductive cycle curve of a carp type fish, explain the time periods that are suitable to adopt the above mentioned methods of induced spawning. **(35 marks)**

   c) If a pair of mature male and female fish fails to spawn after inducing them, describe a method to obtain fertilized eggs from them. **(60 marks)**

2. a) Discuss the importance of induced breeding of fish in aquaculture. **(35 marks)**

   b) Explain why the administration of ovaprim is more effective than GnRHa to induce breeding in fish. **(25 marks)**

   c) A farmer intends to use dried carp pituitary glands to induce breeding of Indian carps in his farm. He is planning to use 20 females and 10 males for the breeding program.

      i. Using the following data, calculate the number of carp pituitary glands required for the breeding program.

      Average weight of a female - 10 kg
      Average weight of a male - 6 kg
      Dosage of injections
      Female (two injections each) - 1st injection :2 mg/kg
      ~~Male (one injection each)~~ - 2nd injection ; 4 mg/kg
      Average weight of pituitary gland - 2.5 mg **(20 marks)**

male (one injection each) – 2mg/kg

ii, Determine the amount of saline solution required for the preparation of each injection for males and females, if required dosage is;

females : 1st injection - 0.5 ml/fish,
2nd injection - 1 ml/fish and
males :1ml/fish **(10 marks)**

iii. If the farmer intends to use ovaprim instead of pituitary extraction to induce the spawning of the same stock of fish indicated in **(i)**, calculate the desired concentrations of ovaprim that should be given to females and males respectively. Recommended doses of ovaprim for;
Female - 0.25 mg/kg
Male - 0.1 mg/kg
(Note that single dose of hormone recommended for both sexes and the desired volume of injection to be given is 1cc) **(10 marks)**

3. Describe briefly the breeding of sea cucumber, emphasizing on the following aspects.

a) Collection of brood stock **(10 marks)**

b) Preparation for spawning **(10 marks)**

c) Hatchery techniques **(40 marks)**

d) Methods of induced spawning **(40 marks)**

4. a) Explain why genetic technologies are used in breeding fish. **(20 marks)**

b) With suitable examples, write a concise account on the different fish genetic techniques practiced in relation to fish breeding. **(80 marks)**

5. Write short notes on the following.

a) Advantages of cryopreservation of fish sperm

b) Factors to be considered in transportation of fish

c) Artificial fertilization of *Clarius gariepinus*

d) Assessment of maturity in female fish

(25 marks each)

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