



**RAJARATA UNIVERSITY OF SRI LANKA
FACULTY OF APPLIED SCIENCES**

**Bachelor of Science in Applied Sciences
Third Year - Semester II Examination – January/February 2023**

FAM 3202 - BREEDING TECHNIQUES IN AQUACULTURE

Time: Two (02) hours

Answer any FOUR (04) questions.

1. A shrimp farmer in Chilaw has informed the National Aquaculture Development Authority (NAQDA) that he is facing the following two main problems in his farm.
 - a) Health issues observed in the shrimp brood stock collected from the wild
 - b) Shrimps failed to attain sexual maturity

Explain in brief the advice that could be given by the NAQDA officer to overcome the above problems. **(100 marks)**

2. “The hormones secreted by the hypothalamus, pituitary, and ovaries in finfish are playing a vital role in the maturation of eggs and spawning”. Discuss this statement with special reference to the hormones that are responsible to activate the above process. **(100 marks)**

3. “Biotechnology has opened a new avenue for the development of genetic resources in aquaculture.” With appropriate examples, evaluate this statement. **(100 marks)**

4. A fish farmer observed that although the Indian carps attained sexual maturity in his ponds, they did not spawn naturally even when the spawning-inducing hormones were used. What instructions could be given to him to produce seeds of Indian carp? **(100 marks)**

5. a) "Common carp is a universal donor of pituitary gland extracts for induced spawning".
Comment on this statement. **(25 marks)**
- b) Explain, how to select the brooders of Indian major carps for breeding. **(20 marks)**
- c) Calculate the number of dried pituitary glands required in a breeding programme of *Catla catla* using 30 females (mean weight 2.5 kg) and 15 males (mean weight 2 kg).
Required dosage of pituitary hormone,
for female - 1st injection: 0.2 mg/kg & 2nd injection: 3.0 mg/kg
for male - single injection : 2mg/kg
Required dosage of injection
for female - 1st injection: 0.5ml/fish & 2nd injection: 1.5 ml/fish
for male - single injection : 1.5 ml/fish
Mean weight of pituitary gland: 2.5 mg. **(30 marks)**
- d) "Although the *Clarius gariepinus* males cannot be stripped, artificial fertilization could be successfully conducted". Justify this statement. **(25 marks)**

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