

**ROYAL CIVIL SERVICE COMMISSION
BHUTAN CIVIL SERVICE EXAMINATION (BCSE) 2012
EXAMINATION CATEGORY: TECHNICAL**

PAPER III: SUBJECT SPECIALIZATION PAPER for FISHERY SCIENCE

Date	: 14 October 2012
Total Marks	: 100
Examination Time	: 150 minutes (2.5 hours)
Reading Time	: 15 Minutes (prior to examination time)

READ THE FOLLOWING INSTRUCTIONS CAREFULLY:

1. Write your Roll Number clearly on the Answer Booklet in the space provided.
2. The first 15 minutes is being provided to check the number of pages, printing errors, clarify doubts and to read the instructions. You are NOT PERMITTED TO WRITE during this time.
3. Use either Blue or Black ink pen or ball point pen for the written part and Pencils for the sketches and drawings.
4. All answers should be written on the Answer Booklet provided. Candidates are not allowed to write anything on the question paper or any other materials.
5. This paper is divided into two sections-namely SECTION A and SECTION B.
6. SECTION A consists of two parts: Part I and Part II.

Part I consists of 30 Multiple-Choice Questions carrying one (1) mark each and is compulsory. The answer of your choice should be clearly written in whole along with the question and option number on your answer booklet. Eg. 31(c).

Part II consists of three (3) short answer questions. This Part carries 20 marks in total.

7. SECTION B consists of two Case Studies. Choose only ONE case study and answer the questions under your choice. Each case study carries fifty (50) marks in total.
8. This Paper consists of ELEVEN (11) pages including this Instruction page.

SECTION A

PART I - Multiple Choice Questions

Choose the correct answer and write down the letter of the correct answer chosen in the Answer Sheet against the question number. E.g. 31 (c). Each question carries ONE mark.

- 1) Carps fall under the family:
 - a) Clupeidae
 - b) Cyprinidae
 - c) Centrarchidae
 - d) Cottidae

- 2) Trouts fall under the family:
 - a) Esocidae
 - b) Sciaenidae
 - c) Anguillidae
 - d) Salmonidae

- 3) *Schizothorax sp.* commonly known as Snow Trout fall under the family:
 - a) Cichlidae
 - b) Cyprinidae
 - c) Odacidae
 - d) Salmonidae

- 4) Large amounts of mucus in a diseased fish is a sign of:
 - a) Bacterial infection
 - b) Viral infection
 - c) Parasitic infection
 - d) Temperature stress

- 5) Indian major carps usually spawn in:
 - a) Mid river where the water current is strongest
 - b) Self-created nests
 - c) Inundated areas adjoining river banks
 - d) Winter when water level is lowest

- 6) A totally protected fish species listed in Schedule – I of Forest Conservation Rules of Bhutan 2006 is:
 - a) *Schizothorax progastus*
 - b) *Anguilla bengalensis*

- c) *Tor tor*
d) *Neolissochilus hexagonolepis*
- 7) During transport of fish, 10,000 fingerlings can be transported in:
a) 20 Liters of water
b) 50 Liters of water
c) 60 Liters of water
d) 100 Liters of water
- 8) Amongst different climatic regions the maximum number of fish species occur in:
a) Sub tropical regions
b) Tropical regions
c) Montane regions
d) Temperate regions
- 9) Based on water depth zonations, the maximum number of fish species occur in the Epipelagic zone due to:
a) High productivity
b) Low water current
c) High water current
d) Low water temperature
- 10) Which of the following does not comply with anesthetics requirement of fish?
a) Should induce anesthesia rapidly with minimum hyperactivity or stress
b) Should be able to maintain the animal in the chosen state
c) Should be able to maintain the body temperature at a constant state
d) Should be effective at low doses; toxic dose should greatly exceed the effective dose
- 11) Rate of effectiveness of anesthesia in fish is not related to:
a) Gill area to body weight ratio
b) Metabolic rates
c) Fat solubility
d) Turbidity
- 12) Which of the following is a non-chemical method of inducing anesthesia in fish?
a) Quinaldine
b) Electro-anesthesia
c) Clove Oil
d) Carbon dioxide

PAPER III: SUBJECT SPECIALIZATION PAPER for FISHERY SCIENCE (Technical)

- 13) Which of the following is not a behavioral sign of illness in fish?
- Flashing
 - Whirling
 - Finning
 - Darting
- 14) Which of the following is the causative agent of “whirling disease”?
- Argulus sp.*
 - Ichthyophtherius multifiliis*
 - Myxosoma cerebralis*
 - Vibrio anguillarum*
- 15) Which of the following is the causative agent of “channel catfish virus”?
- Herpevirus
 - Rhabdovirus
 - Ether stable virus
 - Blood cell virus
- 16) Hormone for hypophysation of fish for breeding is prepared from:
- Thymus gland
 - Ovaries
 - Testes
 - Pituitary gland
- 17) Which of the following is an injection site for hormone during hypophysation?
- In the muscle below dorsal fin
 - Inside the gills
 - In the dorsal fin
 - In the pectoral fin
- 18) The scientific name for Common Carp is:
- Aristichthys nobilis*
 - Hypophthalmichthys molitrix*
 - Cyprinus carpio*
 - Ctenopharyngodon idella*
- 19) Which of the following is not a fish processing technology?
- Drying
 - Freezing
 - Brining
 - De-scaling

